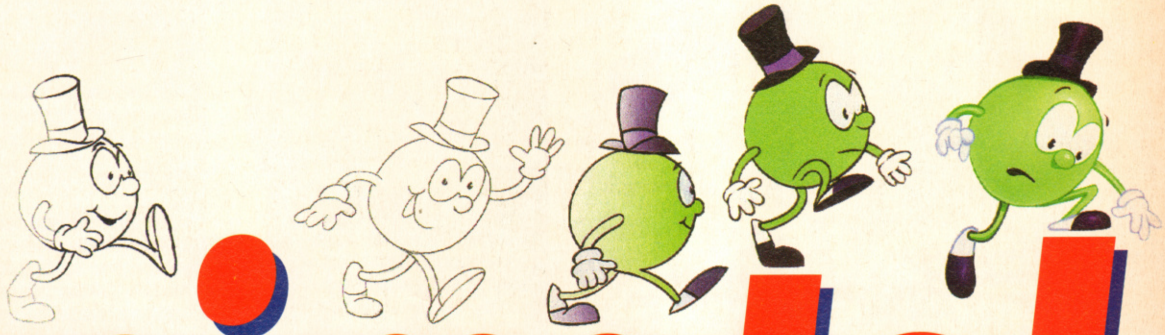
THE BEST SOURCE OF C64 INFORMATION, ANYWHERE!

WIN! Five copies of Heavenbound!

COMMODORE FORMAT

If you've got a C64 then get this

ISSUE 56 ● £2.99 ● MAY 1995



Animate!

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We give you the software and the know-how!

When you buy this magazine you shouldn't be able to read this. If you can, then someone's swiped the covertape. Ask your newsagent for a replacement.

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PLUS!

- Gamebusters
- ROM routines
- GEOS applications
- Public Domain
- Technical tips
- Clubs and fanzines

Tape to disk SMART! Turn to p.5

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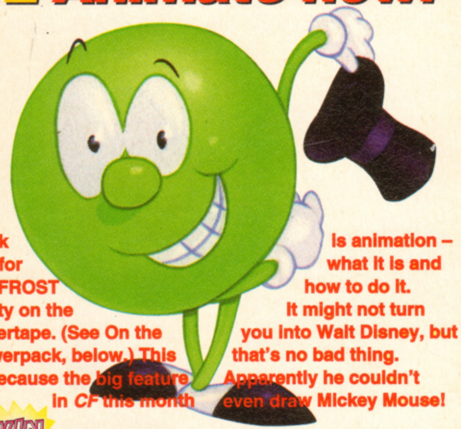
CONTENTS

12 Animate now!



Look out for the FROST utility on the covertape. (See On the Powerpack, below.) This is because the big feature in *CF* this month is animation – what it is and how to do it. It might not turn you into Walt Disney, but that's no bad thing. Apparently he couldn't even draw Mickey Mouse!

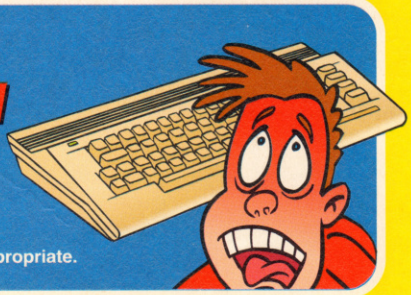
WIN Five copies of *Heavenbound* – see p14.

8 Games arena

SCORE 000500
05 01

Andy Roberts settles down with some new games and makes a pocking sound with his finger and his cheek. Why? Because he can.

17 Grin and repair it! Part II



Do you run to the casualty department with a cold? Do you ignore gaping, gushing wounds? Course not! Jason Finch talks you through diagnosing a sick C64, assessing the gravity of the situation and suggests remedial action – where appropriate.

5 ON THE POWERPACK...

DISPLAY AREA

FROST
Learn to animate with this powerful, yet easy-to-use utility. It's neat, fast and your imagination is the only limit, almost.

Harrier
Flying a jump jet has never been such fun, especially during a war.

Space War
3D blasting action is all yours in this fun game.

Superstrike
Trigger finger not tired yet? Then try this manic shoot-'em-up for size. But wait a minute – no-one's saying it's going to be easy.

Darkest Road (Part II)
Darkest Road is a chilling fantasy text adventure which is sure to set your pulse a-rattlin' and your brain a-thinkin'.

FEATURES

12 Get animated!
Inside everyone there's a budding Walt Disney. Untap your hidden potential.

REVIEWS

8 Games arena
Andy Roberts straps on his ungainly yet protective reviewer's helmet to visit the unpredictable world of the latest C64 games.

16 Be calculating!
GEOS is a neat windows and menus-based system, but what's it like to actually work with? Andrew Fisher brings you *GeoCalc* and shows you how powerful and easy it really is.

GAMES

8 Games round-up II
Andy Roberts sorts the wheat from the chaff, and eventually sees the wood for the trees.

19 Public Domain
The world of all-you-can-get-for-almost-nothing. Andy Roberts goes in and returns, triumphant.

SERIOUS

9 True ROM-antics
Baffled by the error messages. Read this.

21 Techie tips
Problem plus Jason Finch equals solution.

REGULARS

3 C64 News
Info from the around the C64 world, presented in bite-sized chunks just for you.
WIN A subscription to *.net*, the Internet mag.

4 The Mighty Brain/ C64 Directory
Your letters, TMB's replies. Also your one-stop guide to whom to contact, C64-speaking.

10 Well 'ard III
RAMLink – store/load/access data quicker.

15 Buy-a-rama
Buy, sell or just simply interact with your peers.

23 Contact points
Clubs and essential reading for C64 users.

TURN TO PAGE 5 FOR THE FULL COVERTAPE BRIEFING... ➤

News

Home time

Got Internet access (or see 'Open all hours', above for getting there using e-mail)? Then why not try pointing your browser at http://agora.leeds.ac.uk/ronnie/home.html to see the World Wide Web home page of *CF* contributor Jason Finch.

Are you hooked (up)?

One in seven people own a computer according to a recent survey. This means that, each day, around 3250 households acquire a computer.

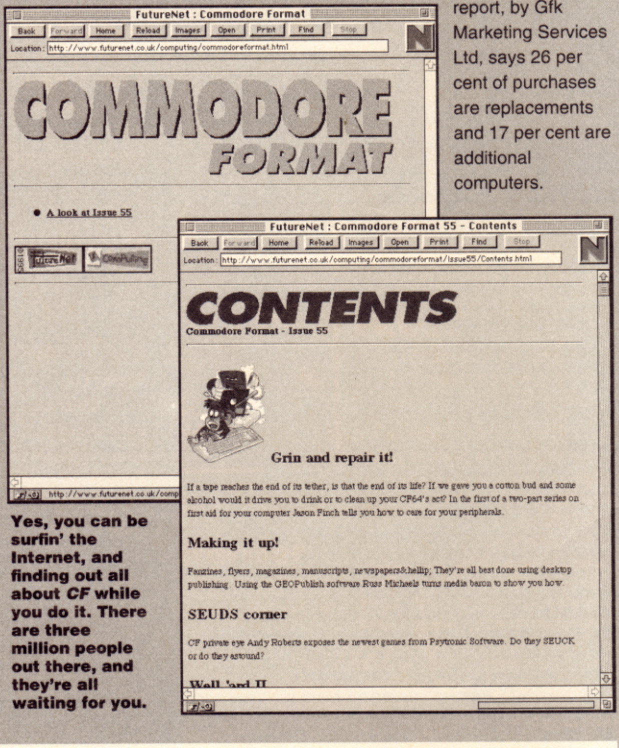
Nearly one third of these are second-hand and nearly half are not the first to be bought by the household. The report, by Gfk Marketing Services Ltd, says 26 per cent of purchases are replacements and 17 per cent are additional computers.

Open all hours

Commodore Format is open to all comers in all countries, at all hours from all angles!

If you have Internet access (perhaps through college?) you can now access the *CF* home page either by beginning at http://www.futurenet.co.uk/computing (the Future Publishing World Wide Web site) or direct http://www.futurenet.co.uk/computing/commodoreformat.html

A letter in *.net* March 1995 explains how you can get Web page links and binary files using e-mail. So, you can use your C64 to retrieve just the text from a World Wide Web page, for example the Futurenet site detailed above, including the hypertext links listed at the end of the message. You also retrieve binary files – for example, programs, images and MIDI files – in this way. There;s plenty to do on the Net if you've got a C64, and it's well worth looking into as a hobby. Remember, *.net* magazine is available at all newsagents!



Location: http://www.futurenet.co.uk/computing/commodoreformat.html

- A look at Issue 55

Location: http://www.futurenet.co.uk/computing/commodoreformat/Issue55/Contents.html

CONTENTS

Commodore Format - Issue 55

Grin and repair it!

If a tape reaches the end of its tether, is that the end of its life? If we gave you a cotton bud and some alcohol would it drive you to drink or to clean up your CF64's act? In the first of a two-part series on first aid for your computer Jason Finch tells you how to care for your peripherals.

Making it up!

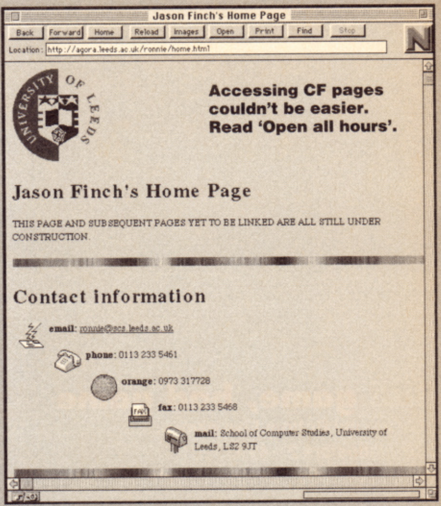
Fanzines, flyers, magazines, manuscripts, newspapers&hellip; They're all best done using desktop publishing. Using the GEOPublish software Russ Michaels turns media baron to show you how.

SEUDS corner

CF private eye Andy Roberts exposes the newest games from Psytronic Software. Do they SEUCK or do they astound?

Well 'ard II

Yes, you can be surfin' the Internet, and finding out all about *CF* while you do it. There are three million people out there, and they're all waiting for you.



Location: http://agora.leeds.ac.uk/ronnie/home.html

Accessing CF pages couldn't be easier. Read 'Open all hours'.

Jason Finch's Home Page

THIS PAGE AND SUBSEQUENT PAGES YET TO BE LINKED ARE ALL STILL UNDER CONSTRUCTION.

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fax: 0113 233 5468

mail: School of Computer Studies, University of Leeds, LS2 9JT

Lion thing

Lions of the Universe, previewed in *CF* is now available, £7.99, on disc, from EBES, 917b Brighton Road, Purley, Surrey CR8 2BP ☎/fax 0181 668 7595.

ICPUG for less

Membership of the co-op ICPUG (Independent Commodore Product Users Group), which currently has 18 full discs for C64 users and which publishes a bi-monthly journal, costs £23 per annum including £1 for the co-op share certificate. However, you can buy part year membership for the period from May to December £16.50 for that period including the £1 for the co-op share. This gives you four issues of the newsletter and access to all other facilities .

John Bickerstaff, Chairman, ICPUG, 45 Brookscroft, Linton Glade, Croydon, Surrey CR0 9NA ☎ 0181 651 5436. CIX:jbickerstaff

C64 notes

Levi Jack and brother, Jason Powell, are arranging and composing old C64 tunes, mainly of the Rob Hubbard variety, and will happily make copies for anyone who is interested.

36 Oak Road, Bedford, Beds MK42 0HJ ☎ 01234 270 697.

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30 Monmouth Street, Bath,
Avon BA1 2BW
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Fax 01225 446019
E-mail cf@futurenet.co.uk

NOTE: Please do not ring the office for advice. We can only answer your questions through the pages of the magazine. Please send written enquiries to one of the addresses above.

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WIN! WIN! WIN! WIN! WIN!

Want to know more about e-mail, comms and the World Wide Web? It's all in *.net* magazine, the monthly Internet magazine from Future Publishing, £2.95 from newsagents. But you could win a free subscription... Just tell us what e-mail is short for and send your answer on a postcard or back-of-an-envelope to Comms Compo, Commodore Format, 30 Monmouth street, Bath Avon BA1 2BW before Friday, 9 June, 1995.

the internet magazine
.net
Wired for Sound

THE MIGHTY BRAIN

Pit yourself against The Mouth of the Brain. Write to TMB, Commodore Format, 30 Monmouth Street, Bath, Avon BA1 2BW or cf@futurenet.co.uk putting 'TMB' in the subject line.

Bad game, bad game

Here are my Bottom Five games:

1 *Ghostbusters 2* – 45%.
There are a lot of graphical glitches in it.
2 *Ghostbusters 1* – 40%. No comment.
3 *Alcazar* – 37%.
It has four difficulty levels. That's all.
4 *Supernudge 2000* – 23%.
Vegas Jackpot on the C16 looked better.
5 *Wonder Boy* – 17%.
It's too easy to die.

Michael Jones, Widnes

It's a 'Dan'ed shame

I notice that 10th Dan could be the beat-'em-up the C64 has been waiting for. Will a demo of the game appear on a future Powerpack?

Also, it's about time *CF* held another Arty Party (*CF*42) and you could give prizes for the best entries, too.

Arif Pervez, Manchester

Unfortunately, Jon Wells has been having major headaches with *10th Dan* and has become rather disillusioned with the whole thing.

However, at *Commodore Format* we reckon he is still capable of producing the game he originally envisaged. So if you want him to continue writing it send in your letters of encouragement (and promises you'll buy it) and we'll forward them. **TMB**

May-I domination?

I would like to see *Mayhem 2* come out as it is one of the best games ever.

Christopher Drummond, Whitehaven

Do you exist in a strange temporal paradox? **TMB**

First among sequels

I would like to congratulate everyone at *CF* on keeping the mag going. Although it's smaller, the quality is still very high. Now for some questions:

1 Was Trenton the first editor of *CF*? Or, if he wasn't who was?
2 Have you been with the mag from the start, too?

Greg Shepherd, Northampton

The first editor of *CF* was, in fact, that legendary old grump Steve Jarratt, who went on to launch the incredibly trendy *Edge* magazine. And, yes, in one form or another, I have been with the magazine from the start, as has Andy Roberts. **TMB**

TMB cock-'em-ups?

Right, I've got proof that there is no Mighty Brain. In *CF*36 in reply to a letter you said that *Sanxion* was your favourite shoot-'em-up, yet in *CF*38 you clearly stated that *Uridium* was your favourite C64 shoot-'em-up. You've made a cock-up, matey. In fact, you've been rumbled.

Simon Hillam, Gainsborough

If making cock-ups were proof of non-existence there would be a great hole where the House of Commons was supposed to be. Actually, what you've rumbled is a scam I was on at the time, taking backhanders to recommend games. But only games I believed in, of course. (*Er, that's a joke by the way – Ed.*) **TMB**

PC = Post Commodore?

Now that John and Steve Rowlands don't produce C64 games could you tell me what they are up to?

Simon Hillam, Gainsborough

PS I luv Emma Jackson

The Apex Boys are working on something hush hush for the PC which may or may not be like a certain game that's been made into a film recently. Er, I hope Emma Jackson isn't your English teacher. **TMB**

Game dropping

What is *Dropzone*?

Stuart Henderson, Birmingham

It's either a superb shoot-'em-up that was on *CF*50's Powerpack (get a back issue now – plug, plug), a dreadful film with Wesley Snipes about parachuting, or one of the best SF novels ever written. **TMB**

C64 Scene directory

Clubs

GeosClub
✉ c/o Frank Cassidy, 55 High Bank Road, Droylesden, Manchester M35 6FS Send an SAE.
ICPUG (Independent Commodore Products Users Group)
✉ 45 Brookscroft, Linton Glade, Croydon, Surrey CR0 9NA
SEUCKERS
✉ 12 Arthur Avenue, Caister-on-Sea, Great Yarmouth, Norfolk NR30 5PQ

Comms

ASPECTS (on-line address) 0161 792 0260
CIX ☎ 0181 390 8446
(on-line address) 0181 390 1255/1244
COMPUSERVE ☎ 0800 289378
DELPHI INTERNET ☎ 0171 757 7150
DIRECT CONNECTION ☎ 0181 317 0100

Hardware

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✉ 917b Brighton Road, Purley, Surrey CR8 2BP fax/☎ 081 668 7595

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VISUALIZE
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WIZARD GAMES
✉ 1 North Marine Road, Scarborough, Yorks YO12 7EY ☎ 01723 376586/503299

PD Libraries

BINARY ZONE PD (T+D)
34 Portland Road, Droitwich, Worcs WR9 7QW ☎ 01905 779274
ELECTRIC BOYS PD (D)
917B Brighton Road, Purley, Surrey CR8 2BP ☎/fax 0181 668 7595
FOX PD (T)
6 Sturton Avenue, Goose Green, Wigan WN3 6SZ
KDPD (T+D)
9 Failford Place, Kilmarnock, Scotland KA3 1UJ
KINGSWAY PD (D)
72 Glencoe Road, Sheffield S2 2SR
MEGA MANIA PD (D)
9 Enler Gardens, Comber, County Down, Northern Ireland BT23 5DS
MEGATRONIX SOFTWARE (T+D)
21 Tiled House Lane, Pensnett, Brierley Hill, West Midlands DY5 4LG ☎ 01384 77172. Fax ☎ 01384 865626/Megatronix_Software@014amiga.demon.co.uk
PLPD (D)
40 Windsor Avenue, Whitehead, County Antrim, Northern Ireland BT38 9RX
SHAREWARE PLUS (D)
PO Box 301, Worcs WR8 9YW
UTOPIA PD (D)
10 Cwmaman Road, Godreaman, Aberdare, Mid Glamorgan CF44 6DG

Upgrades/Repairs

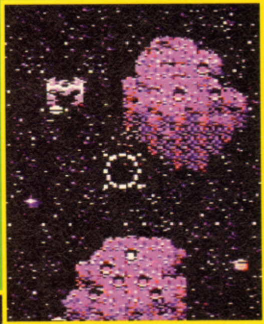
DART COMPUTING
✉ 105 London Road, Leicester LE2 0PF ☎ 0116 247 0059
ELECTRIC BOYS ENTERTAINMENT SOFTWARE
✉ 917b Brighton Road, Purley, Surrey CR8 2BP fax/☎ 081 668 7595
MEEDMORE LTD ☎ 0151 5212202

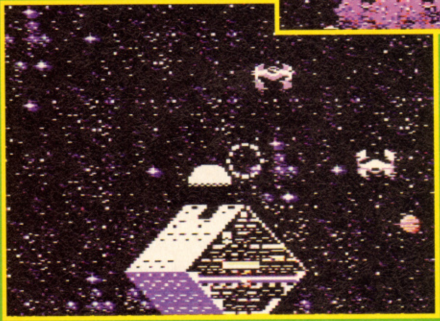
Help us help you
To help keep the directory up-to-date please send changes or suggestions for inclusions to: CF Directory, Commodore Format, 30 Monmouth Street, Bath Avon BA1 2BW, orcf@futurenet.co.uk putting 'CF directory' in the subject line.

COMMODORE FORMAT
FROST UTILITY
POWER PACK
GAME HARRIER
PD SUPERSTRIKE
PD
Darkest Road Part 2
Spacewar

POWER PACK

You've waited all month for this. We've worked for the past 30 days to get it to you. We enjoyed putting it together and now you can enjoy putting it to the test





Blast! You can call all the 'shoots' in *3D Space War*.

3D Space War

The man who sounds like a heavy metal guitarist (no, he doesn't squeal like a cat in a microwave – he's called Alf Yngve) proves once again that not all shoot-'em-up construction kits games have to be the same.

3D Space War is an *Operation Wolf*-style blaster but one that is set in a galaxy far, far away. You control the laser targeter using your joystick and blast away at anything that moves, and pretty soon into the game there's a lot of movement.

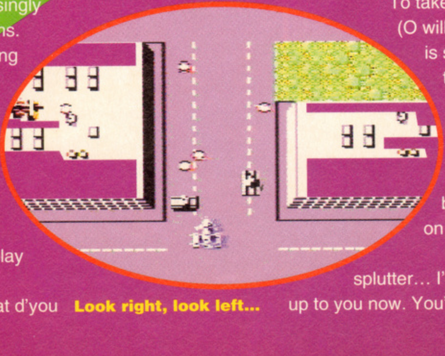
It's trickier than it sounds, and a helluvalotta fun. If you ignore the Lego people who give you mission briefings, that is.

Superstrike

It's an Yngve double bill this month (also available on CD and double vinyl set… er maybe not). *Superstrike* is more your standard *SEUCK* game with vertical scrolling and loads of enemies flying around in ever-increasingly complex attack patterns.

This time the setting is Earth, and the theme is advanced fighter planes. On a scale of originality it rates with Crown Prosecutor plots, but you can trust Alf to make sure the gameplay remains exciting.

Controls: well what d'you expect? Just waggle that joystick and hit the Fire! button.



Look right, look left…

FROST

Hang on. Haven't we had *FROST* on the Powerpack before? We sure have. But this is the new, improved, gets-your-whites-bluer-than-white *FROST*. Turn to 'Get animated!' (page 12) for Jason Finch's run-down on what it offers.

Harrier

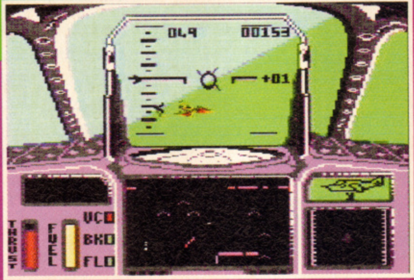
Definition of futility: trying to explain how to play a flight sim in one-fifth of a page.

Tell you what – we'll give you a few tips on how to get started then the best thing to do is watch the demo that comes with the game. That should answer most of your questions.

To take off press P to build up your thrust (O will decrease thrust). When the thrust is sufficient pull back on the joystick to take off. When your well up in the air, press U to retract your undercarriage.

Use the Fire! button on your joystick for forward weapons. For bombs play around with the keys on the top row of your keyboard.

Keep your eye on… urgh… splutter… I've been hit. I'm a goner, son. It's up to you now. You're… on… your… own…



Let your ambitions take flight with *Harrier*.

Darkest Road (Part 2)

At last, we present the second and final part of this spooky, fantasy adventure in which you must defeat the evil Black Wanderer.

Use F1 to toggle the fonts, while the F2 to F5 keys let you choose different tunes with which to accompany your quest.

Apart from that, the game plays pretty much like any standard adventure – in other words, you know what you want to do, but trying to tell the computer in words it can understand is a nightmare.

Still, that's all part of the challenge, isn't it?

NO LOAD ZONE

If you are having trouble loading this month's Powerpack plonk the duff tape in a Jiffy Bag, slip in a tape-sized SAE and send it all to: *CF56* Tape Replacement Service, Ablex Audio Video Ltd, Harcourt Halesfield 14, Telford, Shrops TF7 4QR.

TAPE TO DISC

This month's Powerpack is also available on disc. To get the disc version simply cut out the token on the tape inlay card, write your name and full address on a piece of paper, pop 'em both in an envelope with a cheque or postal order, made out to Ablex Audio Video, for £1.50 (to cover duplication costs) and send it to: *CF56* Tape To Disc, Ablex Audio Video Ltd, Harcourt Halesfield 14, Telford, Shrops TF7 4QR.

GAMEBUSTERS

If the Sceptre of Baghdad is becoming a spectre, or Turbo the Tortoise is on a go-slow, Andy Roberts gives you more than a ghost of a chance...

SCEPTRE OF BAGHDAD

Aha! The hand-mirror of Saddam!

(POWERPACK 55)

It's simple logic really: we give you the games, we create the problems, so it's up to us to give you the answers, too.

As luck would have it, here's the complete solution (along with some extra tips and cheats) for last month's Powerpack epic. Right. Now, from the start…

Swap HANKY for FLUTE, LEFT, LEFT, LEFT, climb stairs, RIGHT, RIGHT, RIGHT, use DUSTER to get rid of OLD LADY, RIGHT, swap DUSTER for WATER BAG, LEFT, LEFT, LEFT, enter door, go down stairs, RIGHT, fill WATER BAG in POOL, LEFT, LEFT, LEFT, swap WATER BAG for KEYS, LEFT, fly on MAGIC CARPET, enter tower, use FLUTE to charm SNAKE, climb SNAKE (pulldown), swap CRYSTAL for WAND, RIGHT, jump up at bird, swap KNIFE for WINGS, RIGHT, stand at edge of platform to knock down BEES NEST, enter door, RIGHT, climb stairs, RIGHT, RIGHT, RIGHT, RIGHT, use KEY on WARDROBE, enter WARDROBE, go down stairs, RIGHT, enter between the trees, swap KEYS for ORB, D, use WAND on WIZARD, swap WAND for LAMP, UP, LEFT,LEFT, climb stairs, RIGHT, LEFT, LEFT, swap LAMP for NET, LEFT, enter door, go down stairs, LEFT, LEFT, catch BEE in NET, L, fly on MAGIC CARPET, LEFT, use WINGS on STATUE, enter where the statue was, DOWN, LEFT, swap ORB for BROKEN ORB, RIGHT, RIGHT, RIGHT, swap FISH HELMET for BROKEN ORB, LEFT, LEFT, enter between torches, LEFT, RIGHT, fly on MAGIC CARPET, RIGHT, swap FLUTE for WATER BAG, LEFT, fly on MAGIC CARPET, LEFT, LEFT, swap WINGS for BLUNT STAKE, D, swap WATER BAG for MIRROR, RIGHT, enter between torches, LEFT, RIGHT, fly on MAGIC CARPET, RIGHT, enter door, RIGHT, RIGHT, swap STAKE for SWORD, RIGHT, enter door, go down stairs, RIGHT, use NET on SPIDER, use SWORD on SPIDER'S THREAD, LEFT, LEFT, LEFT, kill MEDUSA with MIRROR, RIGHT, RIGHT, swap SCROLL for MIRROR, climb stairs, RIGHT, LEFT, swap NET for STAKE, LEFT, LEFT, LEFT, swap FISH HELMET for FLUTE, LEFT, fly on MAGIC CARPET, enter tower, charm SNAKE with FLUTE, climb SNAKE, swap THREAD for CRYSTAL, R, jump at BIRD, swap STAKE for KNIFE, RIGHT, enter door, RIGHT, swap KNIFE for GLOVES, climb stairs, RIGHT, RIGHT, RIGHT, RIGHT, enter WARDROBE, go down stairs, RIGHT, RIGHT,take POTION to save your position (select 'old game' to continue from here), enter door, LEFT, swap CRYSTAL for BOOK, climb stairs, RIGHT, LEFT, LEFT, LEFT, enter door, go down stairs, LEFT, LEFT, LEFT, fly on MAGIC CARPET, LEFT, enter where statue was, DOWN, LEFT, LEFT, use BOOK to open door, enter door, swap BOOK for GOLD, RIGHT, RIGHT, R, enter between torches, LEFT, RIGHT, fly on MAGIC CARPET, RIGHT, swap GLOVE for FISH HELMET, LEFT, fly on MAGIC CARPET, enter tower, charm SNAKE with FLUTE, climb SNAKE, swap FISH

ACTION REPLAY POKES

More neat, petite, and downright handy cartridge POKEs with which to while away the hours. If you're not fully qualified to use these POKEs, here is the introductory beginner's course: freeze the game, press 'E' to enter the POKEs (press RETURN twice after the last POKE), then press 'F3' to restart the game. Simply simple.

BEE 52 DEMO

POKE 6986,173 – Infinite lives

MINDMAZE

POKE 17592,234 – Infinite time

TURBO THE TORTOISE

POKE 40803,234 – Infinite energy
POKE 40838,0 – Infinite lives
POKE 39060,0 – Infinite weaponry

LAST NINJA 3

POKE 28986,165 – Infinite Lives, level 1
POKE 29231,165 – Infinite Lives, level 2
POKE 28824,165 – Infinite Lives, level 3
POKE 29059,165 – Infinite Lives, level 4
POKE 29212,165 – Infinite Lives, level 5

TURBO THE TORTOISE

(CODEMASTERS)

Richard Beckett makes a welcome return to the Games Tips pages, this time with a veritable sockful of tips for this rather dainty platform game. Take it away, Richie...

LEVEL 1

When you reach the fifth pool of water, fall left from the platform on the right. You land safely on a hidden platform, allowing you to go right and collect the potion.

Press down at the second cave entrance to enter a bonus level. The stepping stones sink, so be sure to jump off them very quickly. On the second horizontal moving lift, duck to avoid the platform knocking you down.

To reach the 'P' power up, there is a hidden ledge to the right which will aid your quest.

To kill the guardian, jump in the centre of its head four times (be careful not to hit its arms, though).

LEVEL 2

Pick up boulders and drop them on the water to cross the gap, since they act as lifts once they touch the water.

To reach the platform above the two icebergs, there is a hidden platform above the right-hand iceberg (luckily enough).

To get to the '1-UP', use the hidden platform situated to the left.

The bonus room can be accessed by pressing down to the right of the pick-up bullets.

To reach the second potion there is a hidden lift, which can be found just to the right of it.

To kill the guardian, wait until it lands and then stomp on its head six times to proceed.

He runs! He jumps! He lives for over 150 years!

LEVEL 3

On this level, the bricks act just like the boulders on the previous level (so pick them up and drop them on the water to cross).

The sphinxes (or whatever the plural is) are completely and utterly invincible, so just avoid them.

To collect the '1-UP', take a brick and stand on it to allow Turbo to reach it. Alternatively, jump up from the monster's head below.

At the tomb entrance (above a brick and some bullets), enter the tomb to gain access to a bonus level.

To kill the guardian, jump on its head as soon as it surfaces from the ground – it requires eight hits to kill.

LEVEL 4

It's safe (honestly) to stand on the crocodiles – they act much like the stepping stones from level one.

Collect the bubble potion, which enables Turbo to fly for a limited amount of time.

Use the springs to reach higher platforms, and note that they can be moved around into more useful positions.

When you reach a dark door near the top of the screen, use a spring to reach it, then go inside to enter a bonus level. Bash the guardian 12 times on the bonce to kill it.

LEVEL 5

When you arrive at the second door in the level, pop inside to enter the ubiquitous bonus level.

To kill the guardian, wait until it stops flashing then jump on its head six times to destroy it.

LEVEL 6

Collect the second jet-pack and fly straight along the top of the screen to reach a canister – this is the key to the bonus level. And simply (?!) hit the guardian 18 times to complete the game.

HELMET for THREAD, RIGHT, jump at BIRD, swap FLUTE for STAKE, RIGHT, enter door, RIGHT, climb stairs, RIGHT, RIGHT, RIGHT, RIGHT, enter WARDROBE, go down stairs, RIGHT, RIGHT, RIGHT, RIGHT, enter SHOP using GOLD (either door), swap GOLD with AXE to sharpen STAKE, swap AXE for GOLD again, LEFT, LEFT, enter SHOP using GOLD (either door again),swap GOLD with BOOTS, LEFT, LEFT, enter door, LEFT, climb stairs, RIGHT, LEFT, LEFT, LEFT, enter door, go down stairs, RIGHT, RIGHT, enter door, go down stairs, LEFT, LEFT, LEFT, use STAKE to kill CYCLOPS, RIGHT, RIGHT, RIGHT, climb stairs, RIGHT, RIGHT, R, swap STAKE for RED CAPE, LEFT, LEFT,LEFT, LEFT, climb stairs, RIGHT, RIGHT, RIGHT, RIGHT, enter WARDROBE, go down stairs, RIGHT, RIGHT, RIGHT, RIGHT, RIGHT, walk past BULL using the CAPE, swap CAPE for AXLE, LEFT, LEFT, LEFT, enter door, LEFT, climb stairs, RIGHT, LEFT, LEFT, swap SCROLL for LAMP, LEFT, enter door, go downstairs, LEFT, LEFT, LEFT, fly on MAGIC CARPET, LEFT, enter where the statue was, swap LAMP for QUIVER, D, RIGHT, swap AXLE for BROKEN AXLE, LEFT, jump up to top of screen, RIGHT, RIGHT, walk over FIRE with BOOTS, RIGHT, swap BROKEN AXLE with BOW to load BOW, enter door, LEFT, LEFT, enter between torches, swap BOOTS for LAMP, RIGHT, RIGHT, fly on MAGIC CARPET, RIGHT, enter door, RIGHT, RIGHT, RIGHT, enter door, go downstairs, LEFT, LEFT, LEFT, LEFT, go down stairs, LEFT, stand on SEE-SAW and fire BOW, LEFT, swap LAMP for SCEPTRE, jump into the MIST, RIGHT, fly on MAGIC CARPET, RIGHT, enter door, RIGHT, RIGHT, RIGHT, RIGHT, RIGHT, RIGHT, walk to edge of BALCONY with the SCEPTRE to complete the game.

For those who'd like to try completing the game by yourself, here is a resumé of all the objects in the game – and, more importantly, what they do...

LAMP – use the HANKY,
OLD LADY – carry the FEATHER DUSTER,
PILE OF ROPE(SNAKE) – use the FLUTE,
STATUE – approach with WINGS,
WIZARD – carry the WAND,
WARDROBE – use the KEYS,
BEE – catch with NET,
WATER BAG – fill at WATERFALL or POOL,
BROKEN ORB – replace with SACRED ORB,
DESERT – carry full WATER BAG,
STONE DOOR – carry the BOOK,
SHOPS – use the GOLD,
DESERT WELL – carry FISH HELMET,
PEARL – use KNIFE,
MEDUSA – carry the MIRROR,
SPIDER – approach with full NET,
SPIDER'S THREAD – cut with SWORD,
BULL -carry the CAPE,
POTION – saves game position,
STAKE – sharpen with AXE,
CYCLOPS – approach with SHARPENED STAKE,
DRAWBRIDGE – repair with AXLE,
HOT COALS – use FIRE BOOTS,
BOW – use SPIDER'S THREAD,
QUIVER – use to load the BOW,
SPRINGBOARD – hold loaded BOW and LAMP,
SCEPTRE – approach the BALCONY.

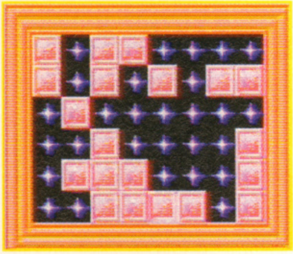
And if you're completely hopeless and can't wait for the listing POKE next issue, here is the cheat mode: hold down the 'C' and 'M' keys on the PERMANENT OPTION screen. The music changes to let you know the cheats are now active, and you can happily start the game with infinite lives and pots of that lovely extra energy.

Alternatively, hold down the 'B' key (again on the PERMANENT OPTION screen) to reset the C64. You can now mess around with the music using:
POKE 31127,(0-5) for the tunes
POKE 41013,(0-10) for the speed, followed by
SYS 31104 to start the music.

MINDMAZE

(POWERPACK 53)

This slightly inferior *Reaxion* clone can be made a little easier thanks to this listing POKE for infinite time. Simply type it in, SAVE for any subsequent use, then type RUN. Couldn't be easier; really.



Er, it's rather an easy maze, isn't it?

```
0 REM MINDMAZE CHEAT BY WAZ
1 FOR X=516 TO 551:READ Y:C=C+Y:POKE
X,Y:NEXT
2 IF C<>3710 THEN PRINT "DATA ERROR":END
3 POKE 157,128:SYS 516
4 DATA 032,086,245,169,019,141,207,003
5 DATA 206,208,003,096,087,065,090,169
6 DATA 032,141,175,008,169,002,141,176
7 DATA 008,076,230,003,169,234,141,029
8 DATA 065,076,001,008
```

BEE 52 DEMO

(POWERPACK 53)

If you're having a tough time completing our superb covertape demo, simply tap in this delicately crafted listing for more lives than you could possibly imagine. And if the demo persuades you to buy the game, you can find our extensive players' guide in *CF*53. Bee-utiful.

```
0 REM BEE 52 DEMO CHEAT BY WAZ
1 FOR X=516 TO 538:READ Y:C=C+Y:POKE
X,Y:NEXT
2 IF C<>2522 THEN PRINT "DATA ERROR":END
3 POKE 157,128:SYS 516
4 DATA 032,086,245,169,019,141,207,003
5 DATA 206,208,003,096,087,065,090,169
6 DATA 173,141,049,024,076,230,003
```

000000
HONEY

Ah, the humble bumble-bee. Get the swat ready.

LAST NINJA 3

(SYSTEM 3/KIXX)

If you're a fan of the Ninja trilogy and fancy a bit of a challenge, here's a simply enormous listing for the cassette version. It's worth the effort, though, as it offers infinite lives for every level of the game. And if you own an Action Replay, check out the POKEs printed elsewhere in this section.

```
0 REM LAST NINJA 3 CHEAT BY WAZ
1 FOR X=519 TO 624:READ Y:C=C+Y:POKE
X,Y:NEXT
2 FOR X=352 TO 428:READ Y:C=C+Y:POKE
X,Y:NEXT
3 IF C<>22718 THEN PRINT "DATA ERROR":END
4 POKE 157,128:SYS 519
10 DATA 032,044,247,056,160,017,140,064
11 DATA 003,136,140,062,003,032,108,245
12 DATA 169,032,141,233,016,169,061,141
13 DATA 234,016,169,002,141,235,016,162
14 DATA 157,189,158,016,157,158,002,202
15 DATA 208,247,169,166,141,020,003,169
16 DATA 002,141,021,003,208,254,141,013
17 DATA 220,072,169,032,141,240,003,169
18 DATA 082,141,241,003,169,002,141,242
19 DATA 003,104,096,169,093,141,230,248
20 DATA 169,002,141,231,248,096,095,002
21 DATA 169,032,141,206,003,169,096,141
22 DATA 207,003,169,001,141,208,003,108
23 DATA 022,000,072,238,032,208,234,173
24 DATA 058,113,201,198,208,005,169,165
25 DATA 141,058,113,173,047,114,201,198
26 DATA 208,005,169,165,141,047,114,173
27 DATA 152,112,201,198,208,005,169,165
28 DATA 141,152,112,173,131,113,201,198
29 DATA 208,012,173,132,113,201,029,208
30 DATA 005,169,165,141,131,113,173,028
31 DATA 114,201,198,208,005,169,165,141
32 DATA028,114,104,044,013,220,096
```

USING
POWER

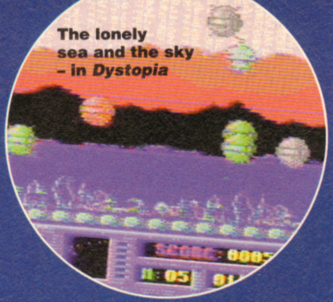
Stealth is the key, as the ninja stomps through the castle, yelling and kicking.

YOUR COUNTRY NEEDS YOU!

As the marauding army of games battles closer and closer, we must combine our efforts to defeat these games of darkness. If you have any maps, tips, cheats, POKEs, solutions, or general game-busting advice which will help the cause, we want to hear from you. Simply jot down your information, pop it into a sturdy yet easy-to-open envelope, then post it to: Gamebusters, *Commodore Format,* 30 Monmouth Street, Bath, Avon BA1 2BW or e-mail it to: cf@futurenet.co.uk, putting 'Gamebusters' in the subject line'

Likewise, if you're stuck on any game, no matter how old or obscure it may be, we can help you with POKEs, listings, tips, or even complete solutions. All you need to do is write your plea on a postcard or stuck-down envelope, along with the name of the publisher and the part of the game you're stuck on, then send it to the usual address (mark your request with 'SOS'). We'll do our best to solve your problem as soon as we can.

Three-for-all



The lonely sea and the sky – in *Dystopia*

You've read the preview, and you've played the covertape demo, now the latest Visualize game has arrived. Andy Roberts looks carefully at the latest in a long line of Defender variants.

DEADLINE

It all began in the year 2094. You were on board an observation ship sent deep into space to examine a planet not entirely unlike Earth, along with its three orbiting moons (*what else do moons do? – Ed*).

Four teams, consisting of between five and 20 scientists, were sent down to each of the four terrains to sample, probe, and monitor whatever they found.

Everything was peachy until one day, as is common with deep-space exploration, radio contact with one of the teams was lost. With no time to draw up emergency back-up contingency plan B, radio contact with the other teams was also lost. Cue eerie and dramatic music. In reality, the men were being attacked by a multitude of aliens and many were killed as they ran for the safety of the teleport bases. They soon discovered that by hiding in the water and remaining motionless, they could avoid detection by the aliens. It is your task, your mission, and your duty to board your Tracer craft and attempt to rescue the scientists from almost certain doom.

Deadline is set against a beautiful horizontally scrolling backdrop, which boasts some incredibly effective parallax tricks. Taking control of the Tracer craft, you must traverse the landscape blasting anything above the water whilst rescuing any scientist-shaped objects in the water.

The Tracer has on-board laser cannons, which allow you to deal with even the most tricky of alien life-forms, and is fast enough to outrun even the swiftest of swift terrestrials. Once you have spotted a white-coat in distress, rescuing the being couldn't be much simpler. Just move the Tracer above the creature's head, at which point a small target appears to aid your rescue, then drop down as far as possible to teleport them into your ship. Once collected, each scientist must be taken to the main teleporter. Here you simply drop down on to the teleporter to zap the scientist to the safety of the orbiting mothership.

Surely *Deadline* is inspired by *Defender*, and *Dropzone*, but that's not to say that it can't bring something new to the genre – it does... Just.

The aliens in this particular game aren't mapped on to the landscape, and as such are completely random. This makes every game, no matter how proficient you may be, a very different experience. As the aliens fly aimlessly across the landscape, the frenzied chaos generates a superb atmosphere, especially if you only have one scientist to rescue and one life to do it with. Thankfully, smart-bombs appear from time to time, which clear the screen (albeit for a brief moment) and allow to you breathe a little.

The shoot-'em-up action is complemented (rather than overshadowed) by the collect-'em-up side of the scenario, indeed it is possible to spend aeons on levels which only require you to rescue a handful of scientists. Perhaps the only drawback is the lack of diversity – each level, although a little different, doesn't offer anything substantially new or challenging for the player. The learning curve, it seems, should curve a little more.

While *Deadline* wouldn't normally rank as anything special, it comes at a time when new releases are, frankly, as rare as a steak still attached to the cow. The graphics are neat, colourful, and well drawn, and there are some superb tunes to accompany the action. Add this to a ridiculously low asking price, and you'd be barmy to ignore it. Let's face it, even if you aren't a big *Defender* fan, you'd be hard pushed to find three better games for under £2.

Go on, treat yourself.

DEADLINE

PRICE: £1.99
FORMAT: TAPE AND DISC
FROM: Visualize, c/o Phil Nicholson, Raylbert, Chequers Lane, Eversley, Hants RG27 0NY.
OTHER INFO: Cheques and postal orders payable to Phil Nicholson.

DYSTOPIA

With the disc version of *Deadline* you also get a free copy of *Dystopia* (in addition to the superb *Tracer*). You may well recall the demo *DYSTOPIA 2*, reviewed in *CF*44, or even the original *DYSTOPIA* demo which made its appearance a couple of years ago.

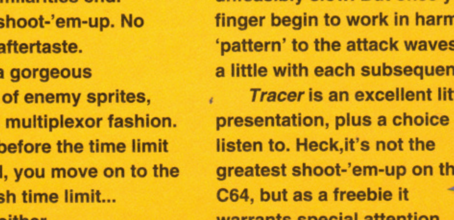
Dystopia, the game, is a simple two-player affair, the sort of thing bored programmers knock up over particularly rainy weekends.

The basic premise goes like this: the action takes place at the bottom half of the screen with each player controlling a small ship. In between the ships is a barrier, which moves up and down at a varying rate. You can't move past this barrier, and so the aim of the game is to hit your opponent (while dodging his or her bullets) and earn points. The player with the most points when the time limit reaches zero wins.

Dystopia is a simple concept, and is, surprisingly, great fun to play. There are some nice graphics, too, along with even more classy sonics by Chris Lightfoot. As a stand-alone game, *Dystopia* would rank as average. But it isn't, and it's great.

RATING 75%

TRACER



-TRACER!!-
-SELECT A TUNE WITH JOYSTICK-
..TUNE 1..
...TUNE 2...
....TUNE 3....
.....TUNE 4.....
-START GAME-

Which tune is it to be, then, pal?

As an added bonus for anyone who buys *Deadline*, the author has included another of his games, free. *Tracer* is the unofficial prequel to *Deadline*, indeed they feature the same main ship, called a Tracer (for the unitiated). However, that is where the similarities end.

Tracer is a static-screen shoot-'em-up. No mess, no fuss, and no bitter aftertaste.

Each screen, set across a gorgeous backdrop, contains a myriad of enemy sprites, swirling around in traditional multiplexor fashion. You must clear each screen before the time limit runs out. If you're successful, you move on to the next screen, along with a fresh time limit...

This continues until you either a) run out of lives or, b) run out of time.

In most cases, you run out of lives. You see, *Tracer* is initially very frustrating. The time limits seem ridiculously short, the attack waves impossibly complex, and your bullets unfeasibly slow. But once your brain and trigger finger begin to work in harmony, you discover a 'pattern' to the attack waves, and you'll progress a little with each subsequent try.

Tracer is an excellent little blaster, with neat presentation, plus a choice of four tunes to listen to. Heck,it's not the greatest shoot-'em-up on the C64, but as a freebie it warrants special attention.

RATING 80%

UPPERS

- Splendid introduction sequence
- No fiddly multiloading nonsense
- Two great freebies – *Tracer* and *Dystopia*
- An absolutely bargain price

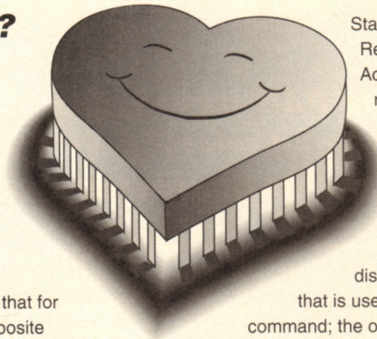
DOWNERS

- Gameplay can become repetitive
- Some colour schemes are lacking
- Concept lacks originality

RATING 90%

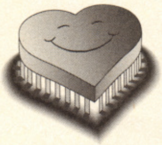
TRUE ROM-ANTICS

How do you SAVE? Don't ask Peter Shilton, ask Jason Finch...



This month we round off the routines that are used for simple loading and saving. Last month we looked at the ROM routines for setting up a file and for specifying a filename, together with that for loading a file from tape or disk. The opposite routine, that for saving a file, is here this month and we are also looking at error reporting. Errors can be generated by the loading and saving routines so it is important that you know what they mean and how to work out if an error has occurred.

SAVE



Routine name: SAVE
Function: Saves file to a device
Call address: $FFD8 (65496)

Parameter passing: Accumulator, X and Y index registers
Prerequisite routines: SETLFS, SETNAM
Error reports: 5, 8, 9, READST
Stack requirements: None
Registers changed: Accumulator, X and Y index registers only.

Description: The SAVE routine should be used when you want to save a section of memory to tape or disk. It is the same routine that is used by the Basic SAVE command; the only difference to the whole procedure is that you must set up the parameters yourself. Any area of memory can be saved so long as you specify the start and end addresses. The SETLFS and SETNAM routines must always be called prior to the SAVE routine to ensure that the file is open and that a filename is specified. Even when working with tape where a filename is not necessary, you should call SETNAM after setting the accumulator to zero. This ensures that the computer is aware that you do not want a filename to be used. An error will be generated if a filename is expected but you don't give one. The start address of the save must be stored as a vector in zero page. In other words, you could use two consecutive locations like $FB and $FC (251 and 252) as your own vector. You store the start address in these locations in the normal low/high format. The accumulator must then be set to the actual location number of the vector. In other words, here you would do LDA #$FB and not simply LDA $FB. The latter would only load the contents of location 251 into the accumulator, not the number 251. Once that has been done you should set the X and Y index registers to the address of the first byte after the end of the block that you wish to save; again in low/high format.

Example: You want to save the area of memory $C000 through to $C29F inclusive to tape with no filename. You decide to use zero page $FB as your vector for the start address. The next byte after the end of the block you wish to save is $C2A0.

```
LDA #1
JSR SETLFS
LDA #0
JSR SETNAM
LDA #$00; #<START
STA $FB
LDA #$C0; #>START
STA $FC
LDX #$A0; #<END
LDY #$C2; #>END
LDA #$FB
JSR SAVE
```

NEXT MONTH

Reading and setting the cursor position, together with a few other little lightweight ROM routines will come under the spotlight next month. After that we move on to the heavy stuff so get your hard hats at the ready

DEALING WITH ERRORS

READST

Routine name: READST
Function: Reads the system status
Call address: $FFB7 (65463)
Parameter passing: Accumulator
Prerequisite routines: None
Error reports: None
Stack requirements: 2
Registers changed: Accumulator

Description: You may have heard of the Basic variable ST which is short for STATUS. I hope you have. The READST routine is the machine language equivalent of finding out the current status of the input and output devices; in other words, finding out what ST is currently set to. You should call this routine after you have accessed an I/O device in some way or other. An I/O device could be anything like the tape deck, a disk drive, a printer and so on. If any errors have occurred, READST will let you know. If there are no errors, the routine will return with the value zero in the accumulator. Otherwise, the different bits tell you what has gone wrong. Figure 1 shows the various values that could be returned.

Example: You are reading in a file one byte at a time and want to branch off to another routine when the end of the file has been reached. This routine could be used to close the file and so on. You can see from Figure 1 that, during a tape read routine, bit 6 will be set when the end of the file has been reached. The value 64 in the example is taken from the decimal value column of the table.

```
JSR READST
AND #64
BNE EOF
```

OTHER CODES

Some other routines generate other errors. These are not detected by the READST routine and are shown throughout this series as numbers in the "Error Reports" line of the routine descriptions. If an error occurs, the carry bit will be set and the number of the error message will be stored in the accumulator. You should have a standard routine that deals with errors by closing down all open channels and files and then reporting the error on screen. Follow all relevant ROM routine calls with a BCS ERROR instruction and this will sort things out. The error codes are shown in Figure 2.

Figure 1:

BIT POSITION	DECIMAL VALUE	TAPE READ	SERIAL COMMS	TAPE VERIFY AND LOAD
0	1		Timed out writing	
1	2		Timed out reading	
2	4	Short block		Short block
3	8	Long block		Long block
4	16	Unrecoverable read error		Mismatch
5	32	Checksum error		Checksum error
6	64	End of file	EOI line	
7	128	End of tape	Device not present	End of tape

Figure 2:

NUMBER	DESCRIPTION
0	STOP key pressed
1	Too many open files
2	File already open
3	File not open
4	File not found
5	Device not present
6	File is an input file
7	File is an output file
8	Filename is missing
9	Illegal device number

Well 'ard III

RAMLink is a power-backed, expandable RAM-based disc drive which can only be described as revolutionary, says Russ Michaels. So, it's make-your-mind-up-time for the rest of us.

RAMLink is more than an RAM expander unit (REU), or a power back-up. It employs the latest technology and has a reliable operating system which is packed with features that enable you to store data at 400 times faster than you can using a 1541.

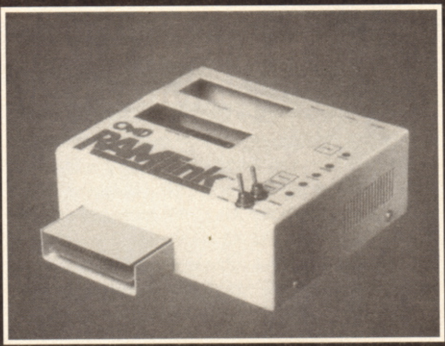
Probably the most important feature in RAMLink is its built-in operating system, RL-DOS, which originates from the DOS used in CMD's hard drives. RL-DOS actually creates a RAM-based disc drive which is fully partitionable. (Partitions are a way of organising large amounts of memory by breaking it up into smaller segments.) As with all CMD storage devices there several partitions to choose from:

- emulation mode partitions that mimic 1541, 1571, 1581 drives; and
- the most versatile, native mode partitions, which range from 256 blocks to 16Mb and incorporate MSDOS-style sub-directories.

Compatibility

Since RAMLink is seen as a standard drive on your system on your system and accepts all standard Commodore DOS commands, you can use it with much more software than other RAM devices. This same compatibility makes it easy for you to start using RAMLink right away.

The unique SWAP button allows you to easily exchange device numbers with your current floppy drives using device numbers eight or nine. This is very useful indeed, and allows you easy access to RAMLink when using a program with limited device number support.



Born in the USA. RAMLink – making GEOS better.

Operating speed

Because RAMLink is essentially a disc drive based in RAM it operates very quickly. It has delivery speeds up to 20 times faster than a 17xx REU and up to 400 times faster than a 1541. You load and save programs at such an amazing speed, and access data so quickly, that you get irritated when you need to use floppies.

Utilities

You get several simple programs with RAMLink. These allow you to easily create partitions and sub-directories, to copy files and whole disc and software for GEOS compatibility.

Now from what you have read so far you are probably thinking RAMLink is just another disc drive right? Wrong! Even though your system sees RAMLink as a drive you can still access the memory directly within your own programs, transferring data between C64 and RAMLink, copying blocks, and so on, as you would with other REU's. However, because you are able to send disc commands to RAMLink this makes the process faster and easier and makes it possible to get the most from your RAMLink and adapt your existing programs even if you have only limited programming knowledge.

If you question your PC and Amiga-owning friends, for example how their games use extra RAM, you find a reference to setting up a RAM disc. You can reply:

'Well, my RAMLink is a permanent RAM disc that accepts DOS commands as soon as I switch on. There is no additional software to be booted up, no configuration files...' and so on...

Then see what snide remarks they have to say about your humble C64. Nine times out of ten they won't even understand what a RAM disc is let alone how to use one!!

GEOS

RAM discs transform GEOS into a much faster and more usable environment, and no other RAM device does the job better than RAMLink. Use the CMD GeoMakeBoot utility and you have instant access to all your GEOS applications. You can even boot GEOS directly from RAMLink in seconds.

Autobooting

RAMLink's unique auto-file feature allows you to run any program from any device as soon as you switch on your computer – you don't have to enter a single command – if you have a C128 you can even define separate auto files for both 128 and 64 modes.Very useful, and the minimum of fuss. Just what a hardware add-on should be.

Additional features

RAMLink also has two extra ports:

- **a RAM port for connecting additional REU's such as Commodore's 17xx series, or GEORAM, which because of RAMLink's independent power supply and battery back-up, can continue to hold data when your computer is switched off;**
- **a pass-through port which can be used with many commercial cartridges and interfaces such as Action Replay or games.**

RAMLink also has a parallel port to provide parallel access to CMD HD series drives, making it capable of transfer speeds far greater than any other drive ever available for the Commodore. A version of the JiffyDOS Kernal is also built into RAMLink which makes executing frequently used commands easy and convenient. It also allows you to take advantage of any JiffyDOS-equipped disc drives hooked up to your system.

RAMcard is the name of the internal expansion board used to transform RAMLink into its own self-contained RAM drive. RAMcard has four industry standard SIMM sockets each capable of holding either a 1Mb or 4Mb SIMM for capacities of up to 16Mb making the upgrading to RAMLink simplicity itself for the user. And of coure, the end result is power, speed and flexibility.

NEXT MONTH

Check out the latest technology from Germany, the FLASH 8, an 8MHz speed upgrade card for your 64 with 1Mb of on-board RAM and a 16bit CPU. Yes, you can upgrade your 64 to the speed and power of an Amiga, but will it take off? (*Er, do you mean that literally? – Ed.*) Jason Finch introduces you to error reports and saving a file to either tape or disc.

To advertise in this space call ROB BENNETT on 01225 442244

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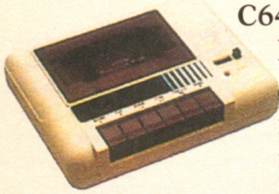

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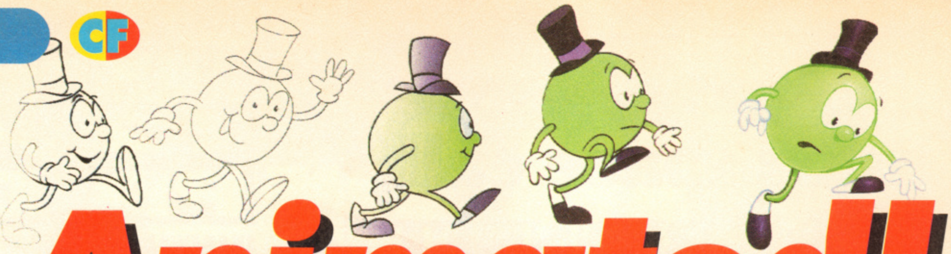


GET Animated!

Animating and displaying sprites on the screen is easy. Jason Finch uses FROST to set free a small, green character who, until now, has been frozen in time.

Sprites appear in the most unexpected of places. In your bathroom, under the bed, and even on your computer screen…

Maybe you haven't got a clue what a sprite is. Maybe you thought I was telling the truth about sprites under the bed. Well a sprite is often called a Moveable Object Block by the eggheads. This is because it's an object on the screen and is defined within a certain small block of squares and, last but not least, it's called this because it's moveable. However, I'll stick to calling them sprites.

Sprites are small graphics that you can create yourself and, within the limitations of BASIC, you can have up to eight of them on screen at a time.

You can have up to eight sprites on screen at a time

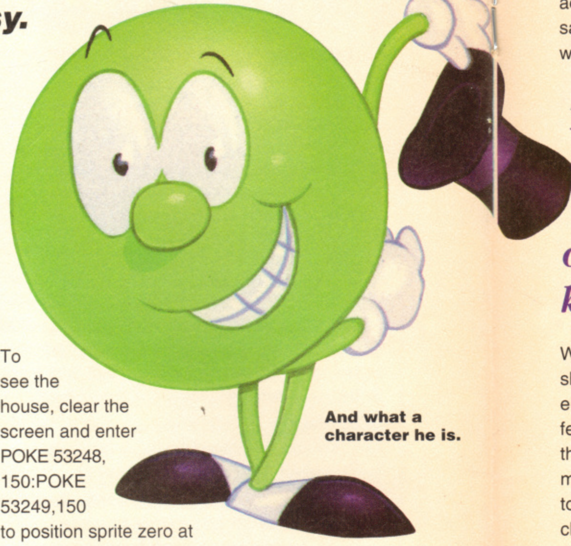
If you know nothing about sprites, hunt around in back issues of *CF* and check out your manual and then come back and find out about animation. On this month's Powerpack (see also page 5) you find an updated version of my *FROST* program; *Format's* Really Original Sprite Thingy. You may have seen it back in *CF*32. However, it's here again, debugged, and ready to enable newbies to design sprites. Use a joystick in port two and the menu bar along the top.

Building confidence

The first thing to do is get *FROST* up and running. In case you're not quite sure when you're in the editor, the screen should look pretty much like that in Figure 1. When you do get to that screen with the big yellow star on it, clear the grid. The easiest way to do that is to hold down SHIFT and tap the CLR/HOME key. This isn't a tutorial for *FROST*, either, so I'll assume you've got to grips with that, too.

So make sure you're dealing with pointer 128 (PNTR should read 128 on the right of the screen), change the sprite colour to pink and start drawing the roof of a house with a chimney. Make sure that it looks exactly like the one at the top of Figure 2. This means make sure you count the right number of squares across before putting the chimney in and things. I'm not going to allow you any free artistic licence with this one. That comes later. Now add the walls and leave some holes for the windows and door as shown by the picture at the bottom of Figure 2. Refer to your completed house as House Frame 1.

You have now defined sprite 128 to look like a cute little pink house. How sweet. The information for this sprite is stored in the 63 bytes from location 8192 onwards, because that is the start of the 128th set of 64 bytes in the computer's memory (128*64=8192). Now, leave *FROST* by selecting QUIT from the PROJECT menu, or hit the Q key.

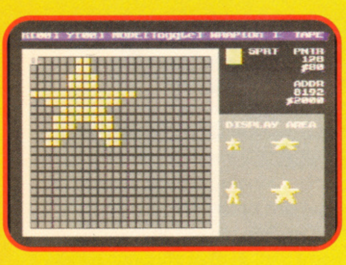


And what a character he is.

To see the house, clear the screen and enter POKE 53248, 150:POKE 53249,150 to position sprite zero at (150,150), then enter POKE 2040,128 to say 'Okay, sprite zero should take on the look of the 128th sprite in memory'. Also do POKE 53287,10 to make sprite zero pink and then with a quick POKE 53269,1 you'll see the house appear on your screen.

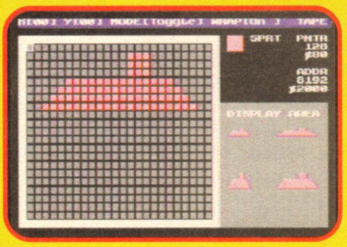
FROST bytes

With the cup in one hand, enter SYS 50000 with the other to get back into *FROST*. You should see your big pink house again on the grid. Now move to the next sprite so that the value under PNTR is 129. You can do this by using the menus or by pressing the + key when the small box is flashing inside the big grid.



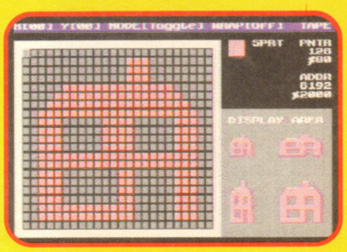
X[00] Y[00] MODE[Toggle] WRAP[ON] TAPE
SPRT
PNTR 128 $80
ADDR 8192 $2000
DISPLAY AREA

1 Okay, so it's just a star. What do you expect as the start?



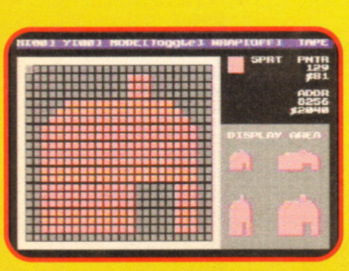
X[00] Y[00] MODE[Toggle] WRAP[ON] TAPE
SPRT
PNTR 128 $80
ADDR 8192 $2000
DISPLAY AREA

2 There's the roof of the house. All right?



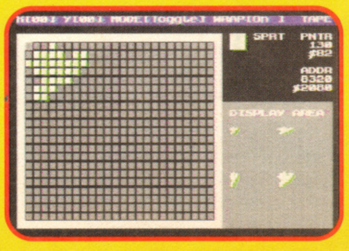
X[00] Y[00] MODE[Toggle] WRAP[OFF] TAPE
SPRT
PNTR 128 $80
ADDR 8192 $2000
DISPLAY AREA

3 The house itself. See it? Good.



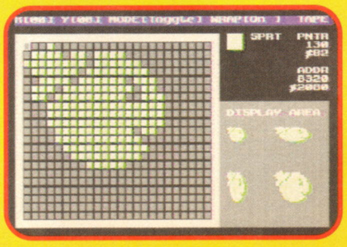
X[00] Y[00] MODE[Toggle] WRAP[OFF] TAPE
SPRT
PNTR 129 $81
ADDR 8256 $2040
DISPLAY AREA

4 No windows in the house, now, you notice.



X[00] Y[00] MODE[Toggle] WRAP[ON] TAPE
SPRT
PNTR 130 $82
ADDR 8320 $2080
DISPLAY AREA

5 Don't panic. It's just Lt. Green Pea's hat.



X[00] Y[00] MODE[Toggle] WRAP[ON] TAPE
SPRT
PNTR 130 $82
ADDR 8320 $2080
DISPLAY AREA

6 And here's the good Lt. Sans legs, though.

Note that key presses only work when you are in the grid, editing a sprite.

Copy sprite 128 to sprite 129 so that you now have two versions of the same house; one with pointer value 128 and the other with pointer 129. If you can't work out how to copy sprites then redraw the house. Fill in the windows so that the house looks like the one shown in Figure 3. This is House Frame 2. By flicking between the two definitions of pointer 128 and 129, you see a house where the lights in the windows go on and off. Okay, so technically it's actually that the windows are being bricked up, but say it's the lights going on and off. The computer's won't know the difference. Quit *FROST* again.

> ***The windows are being bricked up, but say it's the lights going on and off. The computer won't know the difference***

When you return to Basic from *FROST*, the screen should be restored to the way it was when you last entered *FROST*; perhaps one of its most useful features. So you should still have House Frame 1 on the screen; a little pink house somewhere near the middle. Enter POKE 2040,129 and the house changes to House Frame 2. Enter POKE 2040,128 and it changes back. Amazing. It's animation. Now try this.

```
10 POKE 2040,128
20 FOR T=1 TO 100:NEXT T
30 POKE 2040,129
40 FOR T=1 TO 100:NEXT T
50 GOTO 10
```

Now RUN it and be impressed. You have your very own version of the start of that great *Don't Forget Your Toothbrush* game where you lob everything from a duvet to an ironing board out of the bedroom window.

You see, you change the definition of sprite zero. You don't put another separate sprite on the screen. This is an important concept and you must understand it before you can figure out what is occurring. But, generally, that's all there is to it!

Now something more complicated... Building up a program to animate the house and another character.

Reel animation

An animation is a bit like a film reel; it's a number of images flicked before your eyes very fast to give the illusion of movement. For our purposes you have characters, a bit like a cartoon on television. Each character has a number of frames of animation. That house you saw back there had just two, but a character that walks may have many more than that. All you do is flick between these frames and then back to the first one and keep looping around like that.

If you move the actual position of the sprites as well, it can give the illusion of walking, or whatever else you want to do with them. You could have a bomb spinning round as it drops to the ground or a bonus star twinkling in a game. The objects themselves don't matter, it's how to do the animation that's important. In a few moments, if you can control your excitement, you define a character known as Lieutenant Green Pea.

> ***Moving the actual position of the sprites gives the illusion of walking, or whatever else you want to do with them***

He has six frames of animation which gives the illusion he is walking to the right. He's green, he's a pea, and he's about to land on your computer screen.

Peas and Qs

Go back into *FROST* by entering SYS 50000 and move to sprite definition 130 (PNTR=130). Do you need to clear the image? Do so if you have to and change the sprite colour to light green. Now draw a little top hat in the top left corner of the grid. Have you made it look exactly like the one shown in the top of Figure 4? If not re-do it. Now add the body, with eye and mouth, as shown by the screenshot at the bottom of Figure 4. Does your Lieutenant Green Pea look exactly like mine? If not, I'm not playing with you.

When Lt Green Pea is complete, except for legs, go to the next sprite (PNTR=131) and copy sprite 130 to that area. Do the same for pointers 132, 133, 134 and 135. Use the – key to go backwards through the sprite definitions to ensure that you now have six identical Green Pea bodies. These are the Green Pea frames of animation; Frame 1 (PNTR=130) through to Frame 6 (PNTR=135). The sprite pointer values don't matter much; you could equally have put them with Frame 1 at 200 or something, but this makes sure my program works on your computer.

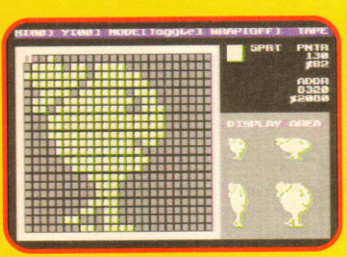
Right then, you now need to go to each one and add the legs. To make it look as if he is walking, you change the legs slightly in each frame of animation. Check out the images in Figure 5. Your frames should look exactly like these. Note that Pea Frame 5 (PNTR=134) has the hat and body shifted down one pixel within the grid. To do this, before adding the legs, hold down SHIFT and tap the D key. This gives him the cute look of bouncing along as he walks.

> ***Hold down SHIFT and tap the D key. This gives him the cute look of bouncing along as he walks***

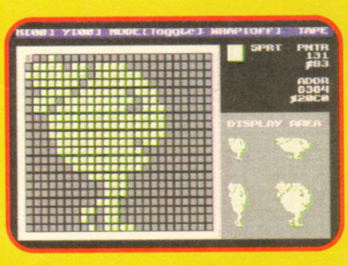
Check out the ANIMATE option under the SPECIAL menu. Enter the values 130 for the start sprite and 135 for the end sprite. You should see your little Green Pea start to moonwalk. Pretty nifty, eh? Press RUN/STOP to return to reality. When you have done all that you should exit *FROST*, type NEW to get rid of any program in memory, and then settle down for a quick bit of animation programming.

Start the take

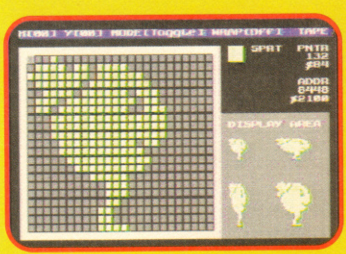
Let's look at a bit of programming and how you would start things rolling. Type in the BASIC program below



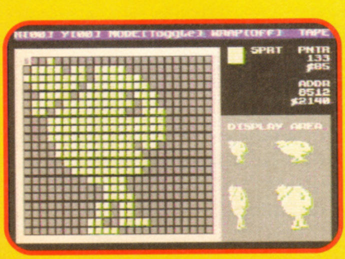
7 **That's better. The fellow' got pins to walk on now.**



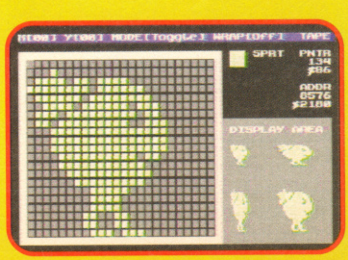
8 **And here he is, walking around.**



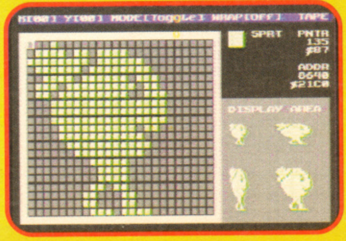
9 **And again...**



10 **And again...**



11 **And again... (There's lots of this in animation)**



12 **Yep. And again... (Put all the 'walking frames' together and he lives!)**

and RUN it. You should find that the screen clears and you end up with a pink house in the bottom right corner of the screen and Lt Green Pea looking indignant on the left of the screen somewhere about halfway downish. In true style, he should be light green. You can make him pea green if you really like, but I wouldn't worry too much.

```
100 REM SPRITE ANIMATION BY J.FINCH
110 POKE 53280,14:POKE 53281,6
120 PRINT CHR$(147)
130 :
140 POKE 53248,58:POKE 53249,220
150 POKE 53250,32:POKE 53251,130
160 POKE 53264,1
170 :
180 POKE 53287,10:POKE 2040,128
190 POKE 53288,13:POKE 2041,130
200 POKE 53271,0:POKE 53277,0
210 POKE 53269,3
```

How does the program work? Well that's just simple sprite stuff. This isn't a tutorial about sprites, more about animation, but lines 110-120 set up the screen, line 140 defines the position of sprite zero and line 150 defines the position of sprite one. The POKE 53264,1 in line 160 puts sprite zero on the right-hand side of the screen. This is the most significant byte (MSB) of the sprite's horizontal position and anything over 255 means you need to set it. It works in a bitwise manner which means that the one location in memory (53264) controls the MSBs for all eight sprites; bit 0 for sprite 0, bit 1 for sprite 1 and so on. Line 180 sets the colour and pointer value for sprite zero, and line 190 does the same for sprite one. Line 200 resets the vertical and horizontal expansion settings, just in case, and line 210 switches both sprites on.

You could change this to POKE 53269,1+2 if it makes you feel better. Each sprite has, if you like, a code number. Sprite zero is coded 1, sprite one is coded 2, sprite two is coded 4, sprite three is coded 8, four 16, five 32, six 64 and sprite seven is coded 128. This is binary and you should understand it. However, if you don't, just use those code numbers. So if you wanted to display sprites one, three and five, you would add the code numbers which are 2, 8 and 32 to get 2+8+32=42. Then POKE 53269,42 switches those ones on. The same for the MSB register at location 53264, and for the vertical and horizontal expansion registers at 53271 and 53277.

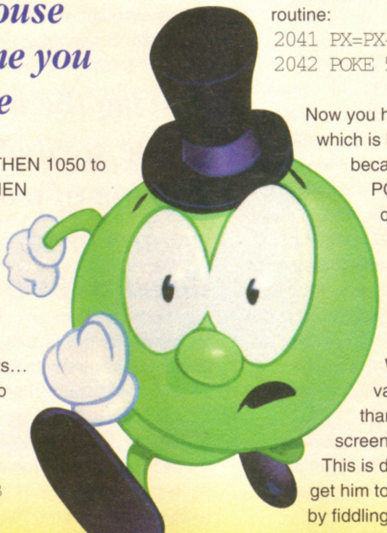
Lights!

Let's animate the house. Add the following lines to the program and then RUN it again:

```
220 :
230 HF=0:HS=0
240 :
250 GOSUB 1000
260 REM REST OF PROGRAM HERE 900 GOTO
250
910 :
1000 REM ANIMATE HOUSE
1010 HS=HS+1:IF HS<4 THEN 1050
1020 HS=0:HF=HF+1
1030 IF HF=2 THEN HF=0
1040 POKE 2040,128+HF
1050 RETURN
1060 :
```

So what does that all do? Well you set some variables in line 230. This is House Frame and House Speed. They are both counters. The sub-routine at lines 1000-1050 is what does the business. You enter it and add one to House Speed at line 1010. If it hasn't reached the value 4 yet you return to the main program. If it has, then you reset the counter and add one to the House Frame counter. Line 1030 checks to see if you have done all the frames and, if you have, the counter is reset to zero. Line 1040 then adds the Frame Counter to the pointer value of the first frame (in this case 128) and stores that number at the sprite pointer location for sprite zero (location 2040).

> *Change the IF HS<4 THEN 1050 and the lights blink on and off in the house a lot slower because you only animate the house every tenth time you call the routine*



If you change the IF HS<4 THEN 1050 to something like IF HS<10 THEN 1050 the lights blink on and off in the house a lot slower because you only animate the house (change the frame) every tenth time you call the routine.

Let's add some more bits… Change lines 230 and 250 to these:

```
230
HF=0:HS=0:PF=0:PS=0
250 GOSUB 1000:GOSUB
2000
```

Now you have added some equivalents for Lt Green Pea. We have Pea Frame and Pea Speed counters. Add the animation routine as you did before:

```
2000 REM ANIMATE PEA
2010 PS=PS+1:IF PS<2 THEN 2050
2020 PS=0:PF=PF+1
2030 IF PF=6 THEN PF=0
2040 POKE 2041,130+PF
2050 RETURN
2060 :
```

You've got the same sort of routine. Nothing much has changed apart from you are using PS and PF instead of HS and HF. It all works the same. Lt Green Pea is animated more quickly because he changes every second time you call the routine. He has six frames of animation and therefore line 2030 checks IF PF=6 THEN whereas the house equivalent was IF HF=2 THEN which is quite sensible.

Action!

Okay, run that program. Lt Green Pea is moon-walking again. Not a good sign. You need to get him moving across the screen. This means you need to change his horizontal position sometimes to give the illusion that he is walking. Change line 230 again:

```
230 HF=0:HS=0:PF=0:PS=0:PX=32
```

Now add the following two lines to the animation routine:

```
2041 PX=PX+1:IF PX>255 THEN PX=32
2042 POKE 53250,PX
```

Now you have set up a variable called PX which is Pea X position. This starts off at 32 because you've set it like that with POKE 53250,32 in line 150 so it is quite a good idea to make PX=32 in line 230.

The extra two lines in your animation routine add one on to the horizontal position of Green Pea every time he is animated. When he reaches a sufficiently high value of PX (in this case, one greater than 255) he returns to the left of the screen and just walks across again. This is done for simplicity only. You could get him to walk all the way across the screen by fiddling with the MSB. Line 2042 just stores his new horizontal position (PX) at the location in memory that deals with the horizontal position of sprite one (53250). If you want him to move further each time, change the PX=PX+1 to PX=PX+4. However, you see this makes him look as though he's floating across your display like a ghost. You can include decimals if you like so that PX=PX+0.8 until you get it looking really realistic.

Peas release me…

You've sussed animation: you design your sprites and you flick quickly between them to give the impression that they are changing. Well, they are changing, but you know what I mean. Move them around and people will think this little character is actually walking. You could create another set of six sprites by flipping Lieutenant Green Pea horizontally in each Pea Frame using *FROST*. Change things and you can make him look as though he's walking to the left instead.

The rest is now up to you. You can of course use multi-colour sprites, expanded ones, or whatever you like. I've given you the building blocks and now you must go away and experiment. So, put on your goggles and have the test tubes at the ready.

WIN! WIN! WIN!

If you're seriously into C64 animation, you could do a lot worse than have a look at the results the professionals get. And what better example than *Heavenbound* from Electric Boys? We've got five copies of this incredible 90 per cent-scoring game to send out to the five winners of this competition.

Simply answer the question below on a postcard and send it to Heavenbound Competition, *Commodore Format*, 29 Monmouth St, Bath, Avon, BA1 2DL. It's got to arrive by May 15th, and good luck. (Please specify tape or disk).

Q. Electric Boys are based in Surrey – but in which town?

BUY-A-RAMA

Broadcast it, barter for it, bring it or blather about it. The vital C64 smart mart starts right here.

WANTED

C64 SSTV amateur radio software on disc please. Must work on Marty Mode 1&2 also Scottie DX or any other inform. Sorry no phone. Mr J Stevens, 5 Heol Daniel, Felinfoel, Llanelli, Dyfed, South Wales SA14 8AL.

Nobby Aardvark tape or disc, any price. Jason ☎ 01543 377456 (West Midlands).

Midi Interface for sound sampler and expander and good quality sampler. Must all be cheap. Also MSX Robotics. Mike, 14 Borough Place, Church Street, Whitby YO22 4BT.

Superscript on disc for C64. Richard Williams, 4 SKER Court, Nottage, Porthcawl CF36 3RR.

Urgently wanted C64 word processor compatible with an interface. Not Mini Office. ☎ 01252 625328.

Software wanted for new PD group. Catalogue can be ordered at the same address. Peter Staaks, De Fazant 42, 7905 HD, Hoogeveen, Netherlands.

Desperately wanted *CF*40. MUST have covertape. Will pay £3. Chris, 3 Rowan Close, Stratford-upon-Avon, Warwickshire CV37 0DT.

Doctor 64 Diagnosis cartridge. Also, Suicide Express on tape. Andy Wilson, 69 Clarendon Road, Wallasey, Merseyside L44 8EJ.

Manic Minor Starion 1526 printer, disc drive, Tubular Bells, old shape C64. Philip Riding, 160 Capel Road, Forest Gate, London E7 0JT.

Rescue from Fractulus, Chuck Yeagers, Advanced Flight Trainer or Simulators. Anything considered. Sean 21 John Sheply St, Hyde SK14 4HN

Time Machine (Activision), Asterix and the Magic Couldron (Melbourne House), Mindshadow (Activision). Alex Dijkstra, Margrietenlaan 27, 4382 TE Vlissingen, Netherlkands.

Designers Pen and tape for C64. Shaun Fuller, 79 Maidenway Road, Paignton, S Devon TQ3 2QA.

Roleplaying games. Disc originals only. £5 per game. Also wanted: strategy games, especially science fiction. Tom ☎ 01708 229543.

Urgently wanted! Barbarian from Psygnosis. Disc version preferred but will consider tape. The Adventure/Puzzle game. Tony, 4 Hulsidale, Hamnavoe, Burra, Shetland ZE2 9LF.

C128D with in-built drive. Preferably with some utilities/software (no datasettes or tapes). Will pay £40 o.n.o. 61 Springfield Lane, Ipswich, Suffolk IP1 4EW.

C64 disc drive plus any games or blank discs. Stuart ☎ 01422 241169. Will pay reasonable price.

Stuck on your new Xmas games? Own a disc drive and £3? Write to me for information about my new program at: 3 Trungle Moor, Paul, Penzance, Cornwall TR19 6UE.

Help! I need issue 75 of Superman with obituary pages, if possible. I will pay £5. Chris ☎ 01978 75664. Please call soon.

Lemmings (on disc) plus mouse and mouse mat. Will pay 12.50 or any price below £15. Steven Higgins, 2 Central Avenue, Stanford-Le-Hope, Essex SS17 8HR.

Hooties C64 swapping and selling, games, demos and any wants. Stephen May, 142 Old Mary Borough Road, Gympie, QLD, Australia, 4570. (Nitros team!)

C64C GWO required for spare, fair price paid. Bill ☎ 0171 237 7099 (6-9pm).

● **Printer-compatible** C64, preferably colour with manual and leads. Good price for GWO machine. ☎ 0171 237 7099 (6-9pm).

1541 II disc drive with leads, discs and manual if available. Good price awaits ☎ 0171 237 7099 (6-9pm).

C16+4 games for sale ☎ Chris 01206 791803.

Starion Manic Minder Flight Sim 2 VIC 1525 printer. Buy or swap for boxed Action Replay. Philip Riding, 160 Capel Road, Forest gate, London E7 0JT.

Internal Power Supply for Commodore Amiga 1500/2000 model number PA4201 5B. Any reasonable price considered. ☎ 01229 822652. Will pay postage, but must be working.

Commodore 64 disc drive. Must be in good working order. Will pay cost plus post and packing.☎ 01642 217242.

FOR SALE

Boxed games from £6. Tapes £2. Send me details of requirements. Will do my best to reply promptly with your requests. Sorry no phone. Mr J Stevens, 5 Heol Daniel, Felinfoel, Llanelli, Dyfed, South Wales SA14 8AL.

C64b, 1541, datassette, synthesizer, sound sotware, 300+ games on tape, disc and cartridge, £100. Expert copy cartridge £20. ☎ 0121 680 5104 (after 6pm).

Elite (disc), £7.50, Vindicators, £2 (cass), £5 four budget games, (cass), £4 will swap for California games (disc) ☎ 01772 616 281.

Commodore items for sale Vic-20 CMD 64 16/Plus 4. SAE (stating computer type) to T Moore, 3 Highfield Avenue, Benfleet, Essex SS7 1RY.

National Lottery Let your trusty Commdore 64 pick your 6 winning lottery numbers. Only £3. Philip Riding, 160 Capel Road, London E7 0JT.

C64 Powerpack, datassette, educational software and games. Also OCP art package, keyboard available but return button sticks. Ring for prices now. ☎ 01932 848747.

Commodore C64 1541 Disc drive, data recorder, MIni Office II, Light Pen, joy stick, also games and books £85. Southend. ☎ 01702 464450. Buyer collects.

CBM games for sale. River Raid, Ninja, Out ran BMX Trials, Super-Seymour, Altered Beast. Very good games and low prices at 50p each. Going fast. ☎ 016627 58706.

Datassette Unit and parallel interface for printers. C64/128 compatible. £20 ONO. Ray ☎ 01896 750930.

C64, 2 joysticks, 2 power packs, Datassette, Azimouth Tape, More than 450 games including WWF, Robocod, Slicks, plus, 7 on cart, Flimbo's Quest, Klax, Navy Seals and 15 *CF* mags. £170 ONO. Craig ☎ 01274 786714.

Games for C64. Many classics from 50p. SAE for full list to Andrew Preston, 31 Hillview Avenue, Broxburn, West Lothian, Scotland EH52 5SB.

Commodore 801 MPS printer, £40. Needs lead and new ribbons ☎ 01604 842125.

Boxed discs. Addams Family, Robocop, Batman, Ghost Busters II, Indiana Jones, Exterminator, Turbo Esprit, Turrican II. £25 the lot or will swap. ☎ 01952 884206.

C64 games from 75p! Including Codemaster titles and many more. SAE for list to Denise, 48 Eastern Avenue, Chippenham, Wilts SN15 3LW.

USER GROUPS

Quick! grab a copy of the C64 Devil Disc. It's got PD reviews and will soon also have C64 fans contributions. Send £1.50 to Duncan Torrie, Tarriebank Home Farm, By Arbroath, Angus DD11 5RE, Scotland.

SEUCKERS the original user group. SEUCKERS, 12 Arthur Avenue, Caister on sea, Great Yarmouth, Norfolk NR30 5PQ for an information pack.

Disc magazine: C64 Powerdisc for only £1 including stunning games and demos. Peter Staaks, De Fazant 42, 7905 HD Hoogeveen, Netherlands.

New mag starting soon with lots of interesting things in it including reviews, competitions, letters, cheats, charts, crosswords, free ad's. Send for information now! Robert Wintle, 16 Lake View Close, Tamerton Foliot, Plymouth, Devon PL5 4LX.

PEN PALS

Commodore Cracker Fanzine. 24 page magazine and covertape for just £1.60 and an A5 Stamped-Self-Addressed envelope, or send an SAE for details. Cheques payable to Brian Turner. Contact: Brian Turner, 46a Kent Avenue, Ashford, Kent TN24 8NQ.

SWAPS

Spectrum +3 with built-in 3-inch disc drive, discs, manual, PSU, leads, for Commodore 6128. John ☎ 0116 830361 (anytime).

24 Commodore games and Light Gun plus 3D Contruction Kit for a C64 disc drive. Lee Jones, 20 Francis Close, Penkridge, Staffs ST19 5HP ☎ 01785 714353.

C64 games on tape and disc for sale from 25p or exchange. Also wanted any golfing games plus Cover Girl Poker. SAE for list to Mr G T Warbrick, 24 Greenwood Road, St James, Northampton NN5 5ER.

Like playing text adventures and want to swap with other adventurers? Write to Alex Dijkstra, Margrietenlaan 27, 4382 TE Vlissingen, The Netherlands.

COMMODORE FORMAT FREE READER ADS FORM

- ● Classified reader ads are free in *Commodore Format*!
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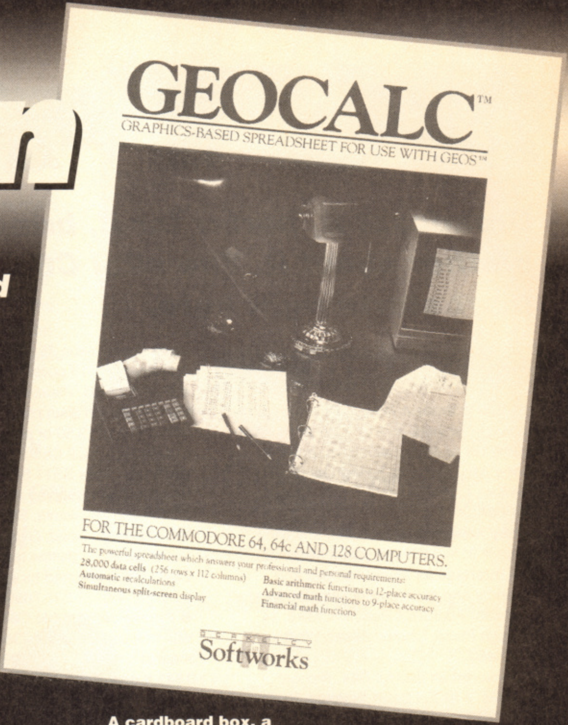
In addition

How good is GEOS? Andrew Fisher, Technical Editor of GeoClub, helps you make up your mind by introducing you to GeoCalc.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A cardboard box, a manual and a disc – it all adds up (get it?) to *GeoCalc*, the *GEOS* spreadsheet for mathematical types

One of the benefits of owning *GEOS* is the ease with which you can learn how to use a new application, because all *GEOS* programs are based around the same windows and menus technique. You can get *GeoCalc*, the graphics-based spreadsheet, up and running in just a few minutes when you know the basics. And there are many powerful options to help you get even more out of it..

What is a spreadsheet?

Essentially, the screen is divided into columns and rows. This gives a grid of boxes, although the technical term is a 'cell'. Into each cell you can place a number, text as a label ('cars', or 'January' for example), and even formulae.

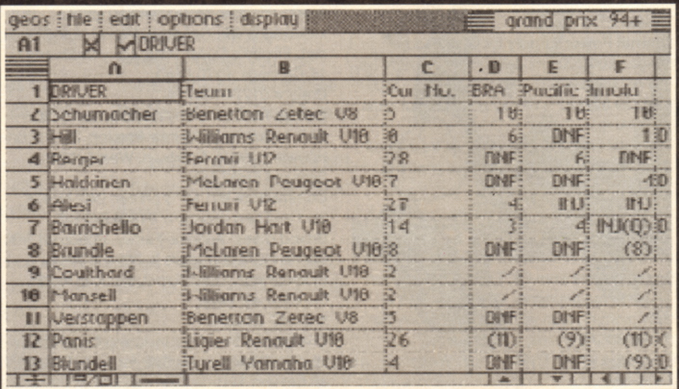
Imagine you wanted to keep track of your accounts. Along the top row of the spreadsheet you type the months of the year. Down the left-most column you enter all the categories that your expenses and income can be divided into – article writing, buying new software and/or toilet paper and so on. Into the cell where the 'January' and 'toilet paper' row and columns cross, you enter how much you spent on the shiny white stuff that month. And you repeat this for all the months and categories.

So, you now have a tidy display of information. But *GeoCalc* can do more. You can enter a formula that says 'add up the toilet paper expenses from January to December and place it in this cell', and your C64 does it, automatically, and even recalculates it when you change the information. However, as well as doing simple sums, *GeoCalc* can carry out financial, trigonometric and statistical functions (like calculating a percentage, the average or even the arctangent [*swoon! – Ed*]) on a single cell or a whole block of cells at once!

You don't even have to keep your accounts in a spreadsheet. Sports fans can keep their team statistics or league tables in a spreadsheet, or if you run a *Fantasy Football* side you can enter each week's results and see how your team is doing. You can design scorecards and questionnaires with ease. There are hundreds of other uses as well..

Appearances count

You can also alter the appearance of your spreadsheet in many ways. You can change the width of the columns, and how the numbers are displayed – from whole numbers, to dollars and cents (it is an American program, after all). It can be up to the size of several A4 sheets of paper (with a limit of 112 columns and 256 rows), and you can choose whether to print it graphically with or without the grid lines or the headings, or use your printer's fonts in draft or NLQ mode. You can alter how the information in each cell is lined up (centred, aligned to the left or right edge) and whether it is in bold, italic, or even bold-italic. You cannot change the font in *GeoCalc*, however..



A1 DRIVER

	A	B	C	D	E	F
1	DRIVER	Team	Car No.	BRA	Pacific	Imola
2	Schumacher	Benetton Zetec V8	5	10	10	10
3	Hill	Williams Renault V10	0	6	DNF	1
4	Berger	Ferrari V12	28	DNF	6	DNF
5	Hakkinen	McLaren Peugeot V10	7	DNF	DNF	4
6	Alesi	Ferrari V12	27	4	INJ	INJ
7	Barrichello	Jordan Hart V10	14	3	4	INJ(Q)
8	Brundle	McLaren Peugeot V10	8	DNF	DNF	(8)
9	Coulthard	Williams Renault V10	2	/	/	/
10	Mansell	Williams Renault V10	2	/	/	/
11	Verstappen	Benetton Zetec V8	5	DNF	DNF	/
12	Panis	Ligier Renault V10	26	(11)	(9)	(11)
13	Blundell	Tyrell Yamaha V10	4	DNF	DNF	(9)

Murray Walker, eat your heart out! The results of the 1994 Formula 1 Championship in a *GeoCalc* spreadsheet (Schumacher cheated!)

Transferring information

One of the great bonuses of using *GEOS* is that you can transfer information between programs quickly. Information in a *GeoCalc* spreadsheet can easily be transferred to a different spreadsheet, or exported as a Text Scrap. The Text Scrap file can be used in *GeoWrite* (and from there to *GeoPublish*), *GeoPaint*, into the graph and chart program *GeoChart*, or the database *GeoFile*. (Reviews of the database and chart program, along with other *GEOS* add-ons will be heading your way soon..) And, of course, you can transfer information into *GeoCalc* from the other *GEOS* programs..

To conclude...

To put *GeoCalc* into some sort of perspective, a PC spreadsheet running under Windows would cost at least £200, would need several megabytes of memory and hard disk space and would be replaced by a superior product in six months' time. *GeoCalc* is the definitive Commodore spreadsheet, and it all fits neatly into 64K of memory! It's a bargain!

Make contact

***GEOS* products are sold by EBES. To get the current catalogue send your name and address and two first class stamps to:**

Electric Boys Entertainment Software,
917B Brighton Road, Purley, Surrey CR8 2BP
fax/☎ 0181 668 7595.

Or, to get in touch with the UK's only dedicated club for GEOS users, send an SAE to:

GeoClub, c/o Frank Cassidy, 55 High Bank Road, Droylsden, Manchester M43 6FS.

It all adds up!

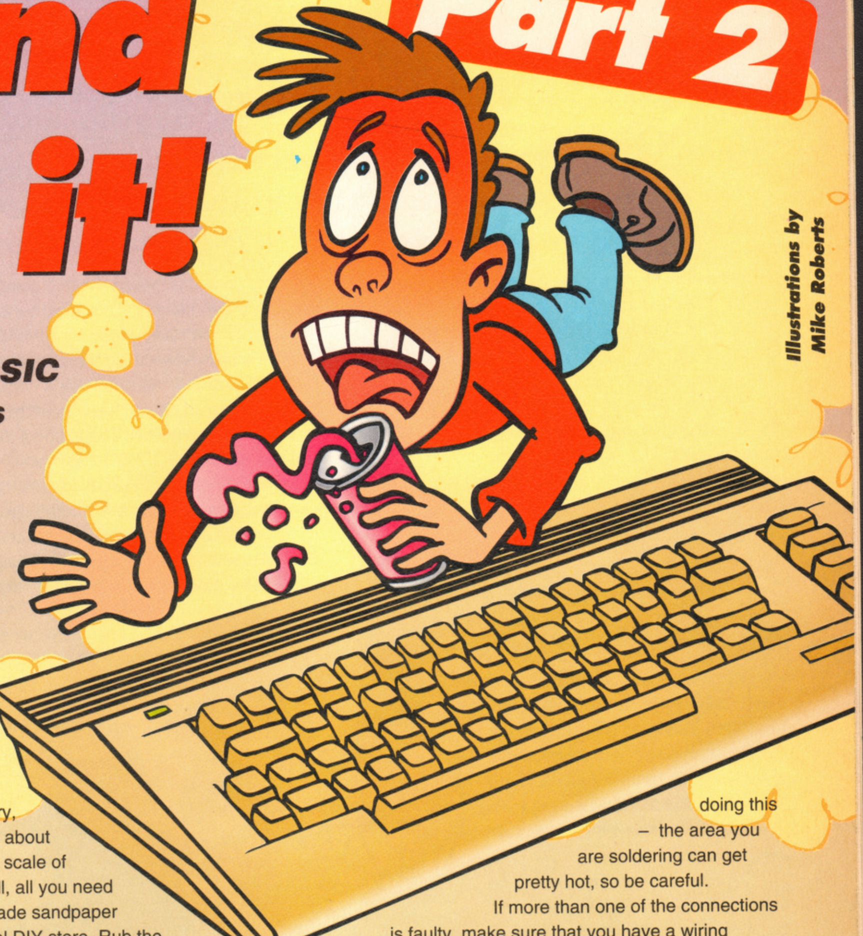
***GeoCalc* won't work without *GEOS*. I recommend version 2.0 because it provides extra features.**

***GeoCalc* is available in two versions:**

- **the 64, which has all the features mentioned in the review, above, and comes with a demonstration file and manual for £39 (overseas postage is extra); and**
- **the 128 which also costs £39 but which works in 80 column mode, runs faster, and allows you to use the numeric keypad of the 128 to enter data more quickly.**

Grin and repair it!

Part 2



Illustrations by Mike Roberts

Cures for connections and for BASIC bugs – Jason Finch concludes his course of preventative medicine.

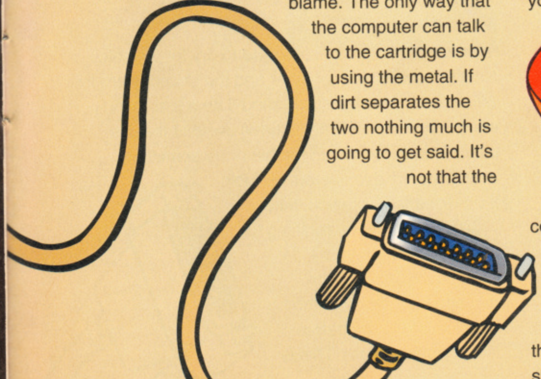
So you just made the mistake of thinking your C64 wanted a drink of pop and now the keyboard is drenched in the stuff? Or maybe your cartridges have stopped working? Perhaps you're a budding programmer who can't work out why the computer keeps chucking up a certain error message. In the second part of this definitive guide to caring for your bits, I look at these problems and more.

Making the connection

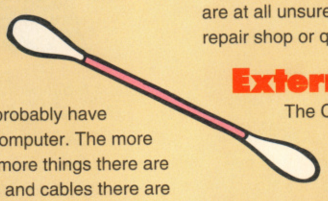
Unless things are cleaned they are going to get dirty, and the metal connectors on your cartridge port are no exception. Over time all sorts of dirt and grime can build up on the thin bits of metal that help your computer realise you've plugged in a cartridge. Look at any of the cartridges you own. Look at the end that normally gets shoved into the slot at the back of the C64. You should see a couple of rows of metal connectors. Are they gleaming examples of shiny metallic surfaces? Unless the thing is brand new, the chances are that the answer is no.

> ***It's not that the cartridge is having a strop with the computer and pretending it's not there; it's because you've let a barrier of dirt build up***

When cartridges stop working, it's often the dirt on these bits of metal that is to blame. The only way that the computer can talk to the cartridge is by using the metal. If dirt separates the two nothing much is going to get said. It's not that the cartridge is having a strop with the computer and pretending it's not there; it's because you've let a barrier build up. You have to get rid of it.



Don't worry, I'm not talking about a problem the scale of the Berlin Wall, all you need is very fine grade sandpaper from your local DIY store. Rub the surface of the metal connectors very lightly to remove excess grime. They should soon become shiny again. Of course, if they vanish, you've rubbed too hard! You have been warned.



Solder on

Those of you with more money probably have more things connected to your computer. The more things you have connected, the more things there are to go wrong, and the more wires and cables there are plugged in to the computer. Generally, nothing untoward should occur on this front, but occasionally you can find that the wiring is damaged.

> ***Have a wiring diagram handy and make sure you know what you're doing. Connecting two strands of the cable the wrong way around could be disastrous***

If the wire itself is the problem, rather than the connection, it's best to buy a new one. Otherwise, carefully dismantle the plug and check the connections. You may find that one of them has come off or is a bit dodgy. If this is the case you need to grab your soldering iron and 'glue' the bits back in place. Note that you should exercise caution when doing this – the area you are soldering can get pretty hot, so be careful.

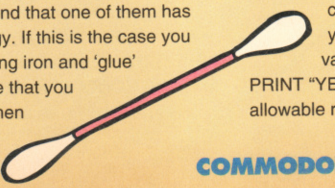
If more than one of the connections is faulty, make sure that you have a wiring diagram handy and that you know what you're doing. Connecting two strands of the cable the wrong way around could have disastrous consequences. If you are at all unsure it's best to take it to a computer repair shop or qualified electrician.

Exterminating bugs

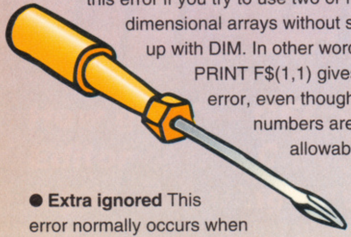
The C64 is a lovable machine in that it usually tells you where it's having a problem with your BASIC programs. There are far too many error messages to explain them all here, but the following are the six most common:

- **Bad subscript** This is to do with arrays. Your program is trying to reference an element of an array whose number is outside of the range specified in the DIM statement. If you don't specify a range using a DIM statement, the default is 0-10. This means that something like F$(1)="MARK":S$(1)="OWEN" works without a moment's hesitation, but F$(20)="MARK":S$(20)="OWEN" causes problems.

The number in brackets is the subscript, and the error means you've chosen a bad number to use. The chances are that these errors occur when you reference elements indirectly, using variables, such as IF F$(N)="MARK" THEN PRINT "YES" and you end up with N being out of the allowable range. If you are using more than the 0-10



default elements, make sure you use a DIM statement at the start of your program. You also get this error if you try to use two or more dimensional arrays without setting them up with DIM. In other words, a simple PRINT F$(1,1) gives you an error, even though both numbers are within the allowable range.



● **Extra ignored** This error normally occurs when someone else is using your program. Too much data is typed in response to an INPUT statement and only the first few items are accepted. For example, if you have a command in your program that says INPUT"ENTER YOUR ADDRESS";A$ and you have typed in "106, Todmorden Road" the computer only accepts "106" as the answer. This is because a comma is used as a separator and therefore anything after it is ignored because you have only requested one item of information in the INPUT command.

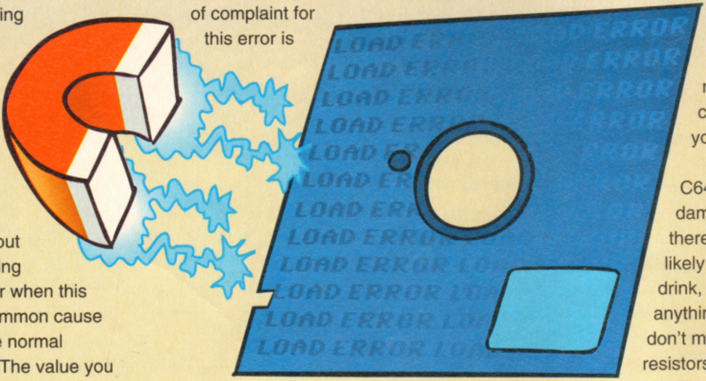
● **Illegal quantity** Certain functions or statements only expect numbers within a certain range. For example, you can only store values between 0 and 255 (inclusive) within memory locations using the POKE command. Similarly, there are only 65536 locations in memory. Therefore, something like POKE 1024,720 gives an Illegal Quantity error. The quantity you have specified is out of the allowable range – it's illegal. If you are using variables, make sure that they are set to the values you expect.

If you have a command along the lines of POKE 1024,X that gives this error, you can correct it when it bombs out by doing PRINT X to find out the offending value and then tracking back to discover when this wrong number was created. Another common cause for this error is the MID$ command. The normal format is MID$(A$,X,Y) or MID$(A$,X). The value you give X must be greater than zero.

● **Next without for** This is caused by either incorrectly nesting loops or having a variable name in a NEXT statement that doesn't correspond with one in a FOR statement. For example, FOR X=1 TO 5:FOR Y=1 TO 5:NEXT X:NEXT Y generates this error because you are trying to do the next X loop without completing all the Y loops. Also, if you edit your variable names, you may have changed the loop control variable (here the X) without changing the equivalent variable in the NEXT statement. You may have jumped to the line with the NEXT in and the computer doesn't think that it is currently executing a FOR loop. Check your branching if this happens.

● **Out of memory** In much the same way as the out of data command refers to data, this means that the computer cannot find any more memory. This could be for program space or for variables. If you try DIM A$(20000) you get this response because there is not enough RAM available to set up the array. If memory isn't the problem, it could be you have too many nested FOR loops, or too many GOSUBs in effect. If you set up a line that says 10 GOSUB 10 and run it, you see what I mean. Each time a GOSUB command is given, the computer has to remember where to go back to when it hits a RETURN statement. If you put lots of GOSUBs within GOSUBs then the computer runs out of available storage memory for the return locations.

● **String too long** Any string variable can contain up to 255 characters. If you try to assign more, then the C64 chucks this error at you. A common cause of complaint for this error is accessing the tape from BASIC using the OPEN command. If you write, say, three 100-character string variables to tape with a PRINT#1,A$;B$;C$ command, you run into problems when you read it back. An INPUT#1,A$,B$,C$ won't read in as expected, either. The strings are stored as one long run of characters and the INPUT# command doesn't know where one begins and the other ends. In effect, you are trying to read in a 300 character string as A$ and the computer stops with an error. Instead, always do PRINT#1,A$;CHR$(13);B$;CHR$(13);C$;CHR$(13) which puts special codes between each string. These are the equivalent of hitting the RETURN key and telling the computer 'Okay, this is the end of this string'. Don't assume that because you get a STRING TOO LONG error in your read routine that the problem lies there – it's more commonly the write routine that's at fault.



Also, with tape, never send empty strings. If you have A$="", B$="COMMODORE" and C$="FORMAT", the variables are read back as A$="COMMODORE" and B$="FORMAT". Blank strings are invisible, as are strings that just consist of a load of spaces. Instead, make a blank string into CHR$(160) which is a 'shifted' space.

Sticky moments

It doesn't have to be pop you spilt, it could be coffee or water or some other liquid. If it falls on to the computer you should switch off and unplug the equipment straightaway. Someone should have told you by now that electricity and all things wet just don't mix. (This is the reason why the light switch in your bathroom is in the ceiling, way out of reach, and you have to pull on a bit of string to work it. – you always wondered why the string was there didn't you?)

The way to solve the problem of spilling something on the keyboard is a controversial subject. What all experts agree on though is that you shouldn't switch the computer back on too soon. The reason is that you could create short circuits and start to blow things up if you start pumping electricity around the circuitry when it is wet. So should you just leave it to dry for a few days and pray? Or should you try something a bit more radical? I should point out here that whatever you do yourself invalidates any warranty that you may have on your computer and that no-one can then be responsible for the consequences of your actions apart from you. Not even me.

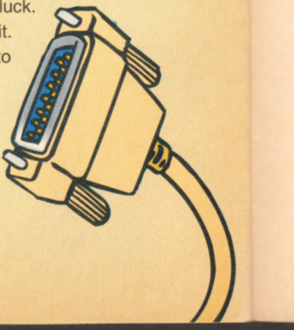
> ***Unscrew the C64's casing and assess the damage. If you could sail a small boat in there, bail out the excess liquid***

You could unscrew the casing of your C64 and open everything up. Assess the damage. If you could sail a small boat in there, bail out the excess liquid. If things are likely to get sticky because you've spilt a fizzy drink, then try to wipe up with a damp cloth anything that looks dubious. However, by this I don't mean swipe away any oddly-coloured resistors or bits of circuitry.

The next step is the worrying one. Now, again this is completely at your own risk, but you can soak your computer in water for a quarter of an hour or so, then hang it on the washing line to dry for a week. Next put everything together and the chances are it will all work. However, this should be a last resort thing only. Basically, if you have decided that it's either time to throw it in the bin or try something desperate, try this one out for luck. If there's another option, take it.

> ***You can soak your computer in water for a quarter of an hour or so, then hang it on the washing line to dry for a week***

The most important thing to do is to switch off your C64 immediately, assess the damage and, if it's not too bad, leave it to dry before switching it back on. This is always a smart move.



PD FORMAT

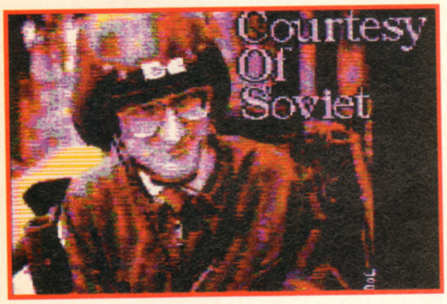
Andy Roberts reviews the latest demos, chats to a PD personality with a preposterous nose, and makes some pathetic jokes in the process.

COURTESY OF SOVIET

(WRATH DESIGNS)

You'd be forgiven for thinking that this new production from the Wrath Designs group was created in the Soviet Union (or what's left of it). However, it's just a name – the group are actually based in Sweden, and, as you've probably already guessed from its European origins, it's a corker of a demo. This is surprising since the demo was created almost a year ago but, due to unforeseen problems, has only just arrived on the scene.

Surely effects and techniques coded last year would look a little pasty by today's standards? *C.O.S* is another self-running spectacular, meaning that you only have to load the first part – the rest of the demo runs automatically before your eyes (allowing you to sit back and absorb the effects). This is fast becoming the standard for most megademos, but it does have its drawbacks in that you must sit through all the boring bits, too. Er, or would, except that *Courtesy of Soviet* doesn't have any boring bits. Honestly.



Why? *C.O.S* it's very good!

The demo kicks off with film-style credits, followed by a superb FLI picture depicting some train spotter-type in a crash helmet. After another brief graphical interlude, in the form of a fantasy landscape, come a couple of fractal-generated landscapes (which, surprisingly enough, are pre-calculated rather than real-time). To heighten the senses even further, another beautifully drawn picture fills the screen before the next part bowls you over completely, as a woman gazes into her crystal orb, light sources spin around and

The first fractel blooms on the C64.

Sorry, that...

...in *CF*49 and *CF*52, we stated that the demo group Camelot were responsible for the highly acclaimed *Ice Cream Castle* demo. It has been brought to our attention that this demo was not coded by Camelot but by CREST. We would like to apologise to the Crest group for any inconvenience, embarrassment, or lack of sleep this error may have caused. The person responsible for this mistake has been shot, had his house burned to the ground, and we have donated his prize collection of garden gnomes to charity.

PD PEOPLE

To regular 'Gamebusters' readers, the name Waz is synonymous with cheat listings, indeed Warren 'Waz' Pilkington has been hacking games for donkeys years. However, he's also been a rather busy little beaver, creating a mutlitude of demos and tunes for the PD scene. To mark the start of a regular series of interviews, Andy Roberts chats with Manchester's 345th most popular export, and discovered a few home truths...

Warren 'Waz' Pilkington. Busy beaver, Data Processing Clerk or simply a wally-with-a-very-silly-nose?

NAME: Warren WIlliam Pilkington/Waz

AGE: 22

OCCUPATION: Data Processing Clerk by day, C64 musician by night, hacker and writer at all other times.

FAVOURITE C64 GAME: *Wizball* – great graphics, odd but brilliant Martin Galway music, and infinitely playable.

WORST C64 GAME: *Ninja Master* (Firebird). This has some of the best animation ever seen on any computer ever... Not.

FAVOURITE ARCADE GAME: Daytona USA (Sega) Our local arcade has just installed a fabulous four-player version – cool.

FAVOURITE C64 MUSICIAN: Rob Hubbard, mainly because of his quality and quality, and for setting new standards for C64 music in the first place. I especially like his music from *Skate or Die*, *Sanxion* (my all-time favourite), *Zoids*, *BMX Kidz*,and *I-Ball*.

FAVOURITE COLOUR: Sky blue, probably because it`s Manchester City's colours (*no prizes for guessing his least favourite then – Ed*).

LAST GAME BOUGHT: *Hero of the Golden Talisman* by Mastertronic, from a car boot sale for 50p. Don't miss out on this classic game!

THE WORST THING ABOUT DANNY BAKER: He's a Millwall fan (nuff said).

CONSOLES: Overhyped, overpriced, and over here. Would you pay upwards of £50 for a game with zero lastability? Most of the games seem to be yawnsome platform games, even the conversions. Yuk.

IDEAL JOB: TV Presenter, staff writer for the NME, or maybe an alternative comedian, after all, I've got a pretty warped sense of humour.

MUSICAL INFLUENCES: Really varied – my CD collection of 300+ singles, 200+ albums, and around 100+ vinyl items range from acoustic folk-rock to ambience, from industrial to thrash. My all-time favourite band would have to be the Pixies, with PWEI a close second. As for writing music on the C64, I like to lay down my own original style for tunes wherever possible.

FAVOURITE PIZZA TOPPING: Ham and mushroom, commonly known as 'Farmhouse' to Pizza Hut afficionados.

THE C64: Because I enjoy using the machine! I've had my C64c for more than eight years and have had hours of endless fun playing games, watching demos, as well as creating demos. There's a definite hardcore of C64 users who know quality when they see it. I still think it's the perfect introduction to computing for a lot of people who can't afford an Amiga orPC (the only other formats I'd ever work on). Notice how everyone's suddenly raving about the Internet? Well, us C64 users had Compunet many, many years ago. I'll continue writing 64 music and demos for as long as people want me to.

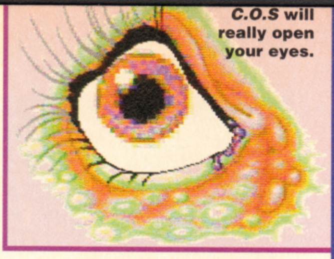
Tease-shirts now available from...

BINARY ZONE: Some time ago Jason 'Kenz' Mackenzie of Binary Zone received a disk containing some of my demos. He liked them, and suggested I produce a discful of demos to release on the PD circuit. This disc is still available from them (Zaw music disc 1 – see DISCOGRAPHY), as is the second compilation (Zaw music disc 2). I also cast perfectly coloured reflections. An amazing concept which is flawlessly executed.

After a brief political interlude, proclaiming: 'Equal Justice and Rights', presumably for Soviet citizens, another stunning piece of fantasy artwork posterises on to the screen. (For the unitiated, 'posterising' or 'Spacial Posterisation' is an effect used mostly on TV news programmes to mask out the faces of criminals with a grid of squares).

Next come some colourful spinning orbs (presumably to occupy your mind as the next section loads in), followed by another political message: 'We are all one people', on crowded tube trains, probably. Finally, you are treated to another exquisite fantasy picture before it's time to flip the disc.

Side B is more of a slideshow than the first half, and begins with a series of fractal-generated flowers which, believe it or not, are the first fractal generated flowers ever seen on the C64 (*and I thought they were ten-a-penny – Ed*). After this is another thoughtful section featuring a huge eye which peers ominously around the screen. Then the demo kicks into slideshow mode, as a series of intricately-drawn pictures (some of which boast enhanced effects) scroll and slide across the screen. Another foray into the world of politics, even more fantasy artwork, and then the demo closes with a bizarre spherical plasma effect.



C.O.S will really open your eyes.

Courtesy of Soviet is an awe-inspiring demo. Not only does it demonstrate first-rate programming, it also boasts some of the best artwork I have ever seen on the C64. Yes, ever. Most of the pictures have been directly based on the artwork of Boris Valejo, and it must be stressed that there are a couple of risqué scenes (as is usual in fantasy artwork). However, this by no means tarnishes the demo.

The music, graphics, and praise-worthy soundtrack have been combined to make one heck of a demo, and, if you own a disc drive, you owe it to yourself to get hold of a copy of *Courtesy of Soviet*. Now.

RATING 95%

suggested doing some nice menus with music for the *Binary Zone Members Disc 2*, as well as including some of my own demos which would be exclusive to that disc. Everything turned out rather nicely, so much so that I offered to do the menus for the *Members Disc 3*! Kenz was pleased with the general quality of my music productions, and so in October 1994 he told me about a proposed compilation of Alf Yngve games (now available as the *Shoot 'Em Up Destruction Set* from Psytronic Software, see *CF*55) and asked if I'd be interested in doing the music for them. I jumped at the chance, and on the whole I think Kenz liked the finished product.

GAME MUSIC: If any games author requires soundracks for any games they are writing, I'll gladly do it. (Contact me c/o Binary Zone or Gamebusters now!)

INDIE MUSIC: It's not dead but it's going through a strange phase, though.

NEXT DEMO: After I've finished the 'Kenzterview', I may make a start on *Quadraped Tearaways 3*, or even another demo with new and original music (which I can`t remember the title of at the moment!).

FAVOURITE BABE: Kristin Hersh, lead singer of Throwing Muses, or maybe even Ricki Lake, the infamous Channel 4 chatshow host.

HACKING/CREATING: I find it a suitable challenge to write hack listings for the C64, and the machine code I learned to write the listings helped me, in turn, to write demos. Owning the book *Programming the Commodore 64* by Raeto West helps enormously. I also use the Dutch USA Music Assembler and Ubik's Music to write tunes.

FLARES: I thought they looked very silly, especially at the height of all that 'Madchester' hype.

'ALBUM' DEMO CONCEPT: I've always thought it would be nice to have a collection of original music that would, if recorded professionally, make a suitable album (and I must confess I'd love to do one for commercial release). After writing the *Album Sampler*, I decided I could do it. That's how the whole *Quadraped Tearaways* series came about.

ALBUM VERSIONS OF ALBUM DEMOS: Funny you should mention that... By the time you read this, a limited edition audio cassette of *Quadraped Tearaways*, *Quadraped Tearaways 2: Subconscious Exorcism*, and a compilation *One of those things: the best of Zaw Productions* should be available. This will include rare tunes, and maybe even a new one, too. The compilation will be limited to 50 copies,and will also come with a mini-novella. They should retail for $2 (including p&p), and would make an ideal gift for non C64-owning friends.

FUTURE OF THE C64: Tricky. I'd say the PD scene will carry on for some time because, as I mentioned earlier, there is plenty of enthusiasm out there for people to write new products. Ordering of games by mail order will become standard – shops already find it commercially viable to fill shelves with overpriced console games instead of quality C64 games. But lets be thankful that people out there still want to write games – respect to all involved.

WORST SUBJECT AT SCHOOL: I really hated biology, it bored me completely. No wonder I got a GCSE grade D in it.

SCROLL TEXTS: Usually they are boring and I have to say that, on reflection, mine are rubbish, too, but including funny stories can sometimes help to liven up an otherwise drab bit of text.

DISCOGRAPHY:

- *Zaw Music Disc 1* – BZD 204
- *Zaw music disc 2* – BZD 241
- *Binary Zone Members disc 2* – BZD 261
- *Binary Zone Members disc 3* – BZD 309
- (Contact Binary Zone for more details about these, see the PD Format Directory, right.)
- *Quadraped Tearaways 2* – *CF*46, and the
- *Quadraped Tearways Remix – Shoot 'Em Up Destruction Set*

PD Format Directory

Unless a particular piece of software is exclusive to a library, we never recommend a company to buy your PD software from. That's because PD software is free and most libraries should have all the latest software in stock. To make the choice easier for you we go to unparalleled lengths each month to compile this, the PD Format Directory, making it surely the most up-to-date public domain guide

If you have never ordered PD software before write to a few libraries enclosing an SAE and asking for a recent catalogue.

Some libraries only stock disc-based software, so state whether you own a disc drive. To make it easier for you, we specify whether the companies stock tapes (T) or discs (D). Look for the symbol after the company name.

If you run a PD library and can't find your company listed here; if you have discovered some software you think we should know about; or even if you are a PD programmer with a new demo to share with the world, write to us at:

PD Format, Commodore Format,
30 Monmouth Street, Bath,
Avon BA1 2BW
or e-mail us at
cf@futurenet.co.uk
putting 'PD Directory' in the subject line.

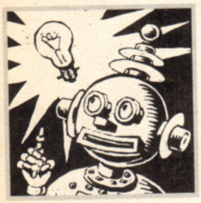
BINARY ZONE PD (T+D)
34 Portland Road, Droitwich, Worcs WR9 7QW
☎ 01905 779274
ELECTRIC BOYS PD (D)
917B Brighton Road, Purley, Surrey CR8 2BP
☎/fax 0181 668 7595
FOX PD (T)
6 Sturton Avenue, Goose Green, Wigan
WN3 6SZ
KDPD (T+D)
9 Failford Place, Kilmarnock, Scotland
KA3 1UJ
KINGSWAY PD (D)
72 Glencoe Road, Sheffield S2 2SR
MEGA MANIA PD (D)
9 Enler Gardens, Comber, County Down,
Northern Ireland BT23 5DS
MEGATRONIX SOFTWARE (T+D)
21 Tiled House Lane, Pensnett, Brierley Hill,
West Midlands DY5 4LG ☎ 01384 77172.
Fax ☎ 01384 865626
e-mail:
Megatronix_Software@014amiga.demon.co.uk
PLPD (D)
40 Windsor Avenue, Whitehead, County Antrim,
Northern Ireland BT38 9RX
SHAREWARE PLUS (D)
PO Box 301, Worcs, WR8 9YW
UTOPIA PD (D)
10 Cwmaman Road, Godreaman, Aberdare,
Mid Glamorgan CF44 6DG

NEXT MONTH

Camelot's *Tower Power* demo ranks as one of the greatest demos ever seen on the C64, but at last a worthy contender has arrived... We reveal the best demo of 1995... But can it really beat *Tower Power* or the all-time number one *Dutch Breeze*?

TECHIE TIPS

King Arthur lies asleep under Camelot, waiting to return when Britain faces its greatest peril. Simply substitute Jason Finch for Arthur, and C64 owners for Britain and you see how legends are born.



THINK TWICE

Dear Techie Tips,
I am considering buying a second-hand disk drive but there are a few questions I would like to have cleared up first.
1 If I do get a drive, which would be the best value for money?
2 What other hardware would I need as well as the disk drive?
3 Is it actually possible to transfer games and files to disk?
Charles McBrien, Glasgow.

1 The best one would be a 1541 MkII. This is quite a slimline drive, so far as C64 drives are concerned, and is reasonable quiet and very reliable. You can buy a brand new one from Electric Boys Entertainment Software for around eighty pounds, so make sure you don't get ripped off by the person selling the drive second-hand. It may be worth saving a bit longer and getting a new one, unless of course you can pick up a real bargain. EBES have a policy of importing these drives from the States. If you have enough dosh you can ask them to make a one-off import for you, but generally they wait until there are about ten people waiting in order to reduce the shipping costs.
2 You wouldn't need any additional hardware. The drive comes with the necessary leads and power supply unit. All you need to do is plug the drive into the power and then use a serial lead to connect the drive to the computer.
3 Any normal file can be loaded into the computer from tape and then saved to disk with the LOAD"FILENAME",8 command. If it's not a Basic program then you can't do this. Instead you can get the game up and running and then use something like an Action Replay cartridge to take a snapshot of memory which can then be saved to disk. You should note that this should only be done on your own games and that making copies of any copyright material in this way is illegal. **Jason**

THE KEY TO SUCCESS

Dear Techie Tips,
About eight years ago I purchased a game called "World Class Leaderboard" for my C64 on disk. It was released by U.S.Gold. The game was supplied with a security key that I have recently lost. It was about one inch long with a resistor at the back which you plugged into the cassette port to enable you to play the game. I need to know if you could tell me what size resistor is used and what connections would be made in the cassette port, or if there is a program I can use to bypass the security mechanism in the game. I have contacted U.S.Gold but the keys are no longer available.
D.J.Smith, Warlingham.

I don't have access to a wiring diagram for the security key that was used on this and other software unfortunately. The tape version obviously had the Datassette plugged into the tape port rather than a security key and the way that was controlled was that the game would crash unless you left the PLAY button pushed down. It is, I think, the case that if you plug a Datassette into the port, and then press PLAY before loading the game from disk, it should work perfectly. The game shuts the tape motor down so the tape won't go round. It could very well be the case that the security key simply emulated the effect of keeping the PLAY button down. **Jason**

RANDOM REPETITION

Dear Techie Tips,
1 Sometimes my computer acts up and every second key on the middle of the keyboard refuses to work. Any idea what's wrong?
2 When generating random numbers is there any way to stop a number which has come up from coming up again so that the same numbers are not repeated?
A.N.Other, Dublin.

1 This could be due to the connections from the games ports: joystick port one in particular. It is unlikely to be anything to do with the connector and cable from the keyboard to the circuit board of the computer. The fact it is every second key on one of the rows does point to something being wrong in its interpretation of the eight by eight matrix that is used for scanning the keyboard. This could be caused by interference from the joystick port.
2 If you were generating random numbers between 1 and 500 and you wanted to ensure that none were repeated, you could set up an array like DIM A(500) that would have all the elements set to zero. Whenever a number was generated, say R, you would do A(R)=1 to mark it as already generated. Each time you generate a random number, check A(R) to see if it is zero or one. If it's one then pick another number. But a far easier method is to assign the numbers 1 through to 500 in order to A(500) followed by a routine that sweeps through the array swapping each entry with one at random. This creates a full array of the numbers 1 to 500 in random order with no repetitions. Groovy. The following short program will do it. I have used the array A%() instead of A() because this is an integer array which saves memory. No decimals are used (like 8.25) and so we can use an integer array.

```
10 DIM A%(500)
20 FOR N=1 TO 500:A%(N)=N:NEXT N
30 FOR N=1 TO 500:R=INT(RND(1)*500)+1
40 T=A%(N):A%(N)=A%(R):A%(R)=T
50 NEXT N
60 FOR N=1 TO 500:PRINT A%(N);:NEXT N
```

Jason

WHAT A CHARACTER

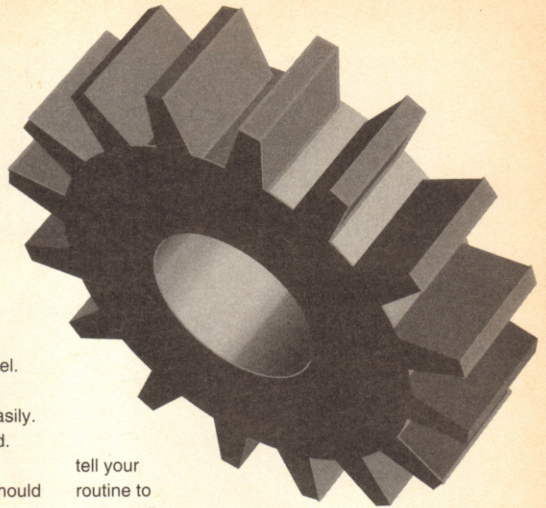
Dear Techie Tips,
I've got three questions... Here they are;
1 Is it possible for me to do character-to-character collision on the C64?
2 Is there any way in which you can detect what character a sprite has collided with?
3 I do not know how character blocks or landscaping works. Can you tell me? I really would be most grateful.
John Smith, Liverpool.

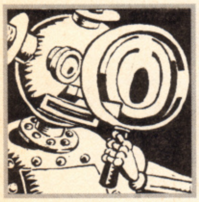
1 In what sense do you mean? You cannot print two characters on top of each other and therefore this seems a bit odd. If you had two square block characters moving around the screen with some X and Y coordinates, it would probably be possible to see if they had collided by referencing the coordinates and checking one pair against the other.

2 There is no simple way to do this. You must do a bit of maths to work out the X and Y screen coordinate of the sprite. This can be done with X=INT((PEEK(53248)-24)/8) and Y=INT((PEEK(53249)-50)/8) for sprite zero. This should give you a value in the range 0-39 for X and 0-24 for Y. You can then do S=1024+Y*40+X to find the screen location and C=PEEK(S) to find the character that is on the screen at that location. However, bear in mind the MSB line of sprites and that in practice you are going to need some extra code to deal with the case where the physical horizontal coordinate of the sprite is more than 255. As soon as the sprite passes over the MSB line, the actual horizontal value resets itself to zero, and the MSB flag for that sprite (bit 0 of location 53264) is then set to one.

3 Entire features have been written on this subject, including a couple in recent issues of *CF*. Basically you split your backgrounds into objects. An object may be the top part of a column, a bush, a cloud, some clear blue sky, or some other similar thing. Each object is made to be the same size; say four by four characters. If the column needs to be thinner than four characters, you just pad the block out with spaces. The background map then references objects rather than individual characters. So if you had four by four blocks, the screen would only be ten blocks across by six down. So a screenful of information can be stored in 60 bytes. This is the principle at least.

Jason





SNESIBLE SWAP

Dear Techie Tips,

I sold my SNES to get a Commodore 64 because SNES games cost me loads of money. It first started when my mate made me play *Mayhem in Monsterland*. That's a top game and twice as good as any SNES game I've ever played. The sad thing is I'm going to need you to answer some questions. Please!

1 Could you give me a listing that makes eight sprites (each 24 by 21 pixels) to form one big sprite type thing?

2 Was it worth me selling my SNES for a Commodore 64?

3 How do you know how much data to read in with a READ command?

4 How do I get a game published?

G.Storey, Manchester.

1 It depends if you want them all in a line, or in a block with three on the top, three in the middle and two at the bottom, and so on. To display all eight sprites you would do POKE 53269,255. Individual sprites can be positioned with POKE 53248+N*2,X:POKE 53249+N*2,Y where N is the sprite number (0-7), X is the horizontal position and Y is the vertical position. You may also need to do POKE 53264,PEEK(53264)OR2^N or POKE 53264,PEEK(53264)AND(255-2^N) to switch the MSB on and off respectively. The MSB is a line that runs down the right hand side of the screen. When you do POKE 53248,255 you will see that the sprite is not as far right as it could possibly go. If you then do POKE 53248,0:POKE 53264,1 it will move right one pixel. This has gone over the MSB line. It's a curious concept, but one you will get the hang of quite easily. The ^ character is the up arrow on your keyboard. Also do POKE 2040+N,P to change the pointer values for sprites. Our sprite animation feature should give you some ideas.

2 Of course it was. A SNES is great if you want to vegetate and just play games all day. With a C64 you can do that and more. There is the vegetation stage when you feel like it, but there is also the scope to get your hands dirty with a bit of programming. Plus the games on a Commodore 64 are far cheaper and much more playable.

There are plenty of classic C64 games. I can't think of many classic SNES games; only expensive ones that last about two hours before you finish them.

3 You will generally add DATA to a program for a reason. Sprites have 64 items of DATA each, for example. Therefore if you wanted to read in the information for two sprites you would know to read in 128 items. For anything else you can always add a "-1" DATA item at the end of the list and just tell your routine to stop reading once it has found the -1. You would do that quite easily with a routine like this one:

```
10 N=0
20 READ X:IF X=-1 THEN 50
30 POKE 1024+N,X
40 GOTO 20
50 REM .. REST OF PROGRAM ..
100 DATA 008,005,012,012,015
110 DATA -1
```

4 You write a decent one and send a copy of it to a publishing company with a nice letter. Bear in mind that the company will get hundreds of games sent to them and that yours must really stand out as original and innovative. They certainly don't want to see just another platform game, or just another shoot-em-up. They need originality.You have more chance of getting your game published if it has an intriguing twist or something. And by that I don't mean bend the disk you send it on. **Jason**

TECHIE TROUBLES CURL UP AND DIE!

Jason Finch is the Techie Hitman. The gun of his knowledge blasts bullets of clarity into the heart of problems, leaving a gaping exit-wound of comprehension.

If you're in trouble, if no-one else can help, and if you can find him, maybe you can write to Jason. Here's how. Pop prob in envelope. Write on envelope: Techie Tips, *Commodore Format*, Future Publishing, 30 Monmouth St, Bath, Avon, BA1 2BW. Put on stamp and leave in post-box. Easy.

Contact Points

Join the club

Are you looking for help, advice, news and contact with other C64 users around the world? If the answer is yes!, this column is for you. And, if you run a club or fanzine, contact us! Write to Clubs/Fanzines, Commodore Format, 30 Monmouth Street, Bath, Avon BA1 2BW or cf@futurenet.co.uk putting 'Clubs' in the subject line and telling us what you do.

In the first of a new series Andrew Fisher looks at the multitude of clubs and fanzines run for the benefit of C64 users worldwide.

Commodore 64 Software Hire Club

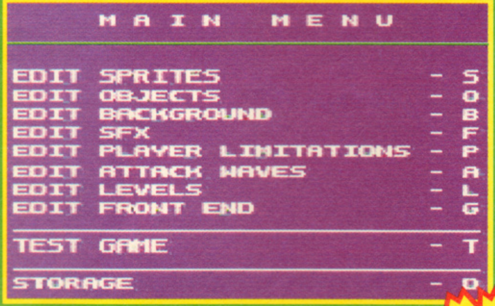
Members of this Club, which was was established several years ago, can hire games for seven days at a time. Life membership of the club is £3 and hire costs range from £1 up to £5 for the most complicated and popular software. Tape, disc and cartridges are all catered for in the easy-to-read catalogue. In addition, you receive a newsletter with every order which tells you about the latest news and additions to the library, and includes advertisements and advice from members. So if you want to 'try before you buy' or play classic games that are difficult to get hold of, get in touch. See 'Contact Corner' for the address.

SEUCKERS

If you've ever heard of the *Shoot 'Em Up Construction Kit*, then SEUCKERS is the club for you. SEUCK is a game-making utility created by Sensible Software (who wrote *Wizball*, *Sensible Soccer*, for example) which allows anyone to make a game even if you don't know how to write machine code.

You can combine the backgrounds, sprites (which were turned into 'objects' – such as the player's bullet, or an enemy explosion), sound effects and attack waves to make a vertically-scrolling (or 'push' scrolling, or still-screen) game via a series of menus.

Formed just over a year ago, SEUCKERS membership is free. You simply send an SAE to register and receive the list of PD games – all of which have been produced on SEUCK.



```
        M A I N    M E N U

EDIT SPRITES                 - S
EDIT OBJECTS                 - O
EDIT BACKGROUND              - B
EDIT SFX                     - F
EDIT PLAYER LIMITATIONS      - P
EDIT ATTACK WAVES            - A
EDIT LEVELS                  - L
EDIT FRONT END               - G

TEST GAME                    - T

STORAGE                      - D
```

Shoot-'em-up with style.

Choosing games from the list, you then place an order (the minimum is £2 for five games). Order ten, and you get two free. With your order you also get the latest chart (telling you which are the best games currently available) and a full list of all the latest releases available.

What are the games like? Pretty hot! There are some clever bods (and bodettes!) wringing every drop of performance out of it. (You may have seen games by Alf Yngve on earlier *CF* covertapes – they were all written using SEUCK). From a single-screen clone of *Bomberman*, to the amazing *Day Out* which chronicles an alien invasion and comes complete with an intro sequence (written using SEUCK), there are games to suit every taste. I think *U-R-Reg*, featuring an OAP trying to collect his pension, is the funniest...

COLLECT
THESE

Well what are you wting for? Collect it!

If you own SEUCK and write your own games with it, send them to SEUCKERS. In return, you can choose two free titles from their list. SEUCKERS also provide two important services:

- crunching, which reduces the space your game takes up on tape or disc; and
- for just 50p a game you can add music to your masterpiece – either on the title screen, during the game, or both!

Hot off the presses is the earth-shattering news that SEUCKERS are joining up with the group PARALLEL LOGIC to produce a great fanzine for users of SEUCK and the 3D Construction Kit. Also, the SEUCKERS library is expanding to cover 3DCK games as well, so send any really good examples to SEUCKERS right now!

Well, did you collect it then? Looks like it.

CONTACT CORNER

Commodore 64 Software Hire Club: C Statham, 3 Briarbank Avenue, Porchester Lodge Estate, Nottingham NG3 6JU. Send an SAE to receive details on how to join.

SEUCKERS: c/o 12, Arthur Avenue, Caister on Sea, Great Yarmouth, Norfolk NR30 5PQ.

COMMODORE ZONE
34, Portland road, Droitwich, Worcs
WR9 7QW.

NEXT MONTH

Look out for the lowdown on one of the oldest clubs around and make the acquaintance of some of the hottest fanzines out.

STOP PRESS!

Now available is the latest issue of a brave new fanzine – *Commodore Zone*. From the preview version I've seen, Jason MacKenzie (of Binary Zone PD, trivia fans!) has spared no expense, with great-looking artwork and some of the hottest names in the C64 scene writing articles. For more details write to COMMODORE ZONE (see 'Contact Corner'). Jason would also like to hear from people interested in writing articles for the magazine, or in advertising in future issues.

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- Freeze the action and view the sprites - watch the animation - customise your games -kill sprite collisions

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TAPE TURBO
- This feature will add Turbo Reload to the programs that you save to tape - no user knowledge required.

FAST FORMAT
- Format an entire disk in about 10 seconds - no more messing about.

PRINTER DUMP - Print out your frozen screen to printer - MPS 801, 803, Epson, Star, etc. - very versatile.

CENTRONICS INTERFACE
- For parallel printers, Star, Epson, etc. Print out listings with graphic characters etc. (Cable required for parallel port £12.99)

SCREEN EDITOR
- Now you can edit the entire frozen screen with this text editor - change names on high scores, etc. Great fun!!

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